

FINE ARTS DEPARTMENT *stacks*

THIRD SERIES VOL 62 NUMBER 12

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OCTOBER 1955

NCV.9

DETROIT

# THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

66 PORTLAND PLACE LONDON W1 • TWO SHILLINGS AND SIXPENCE

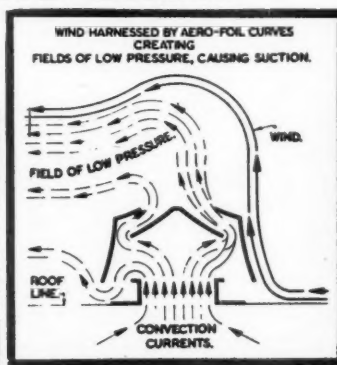
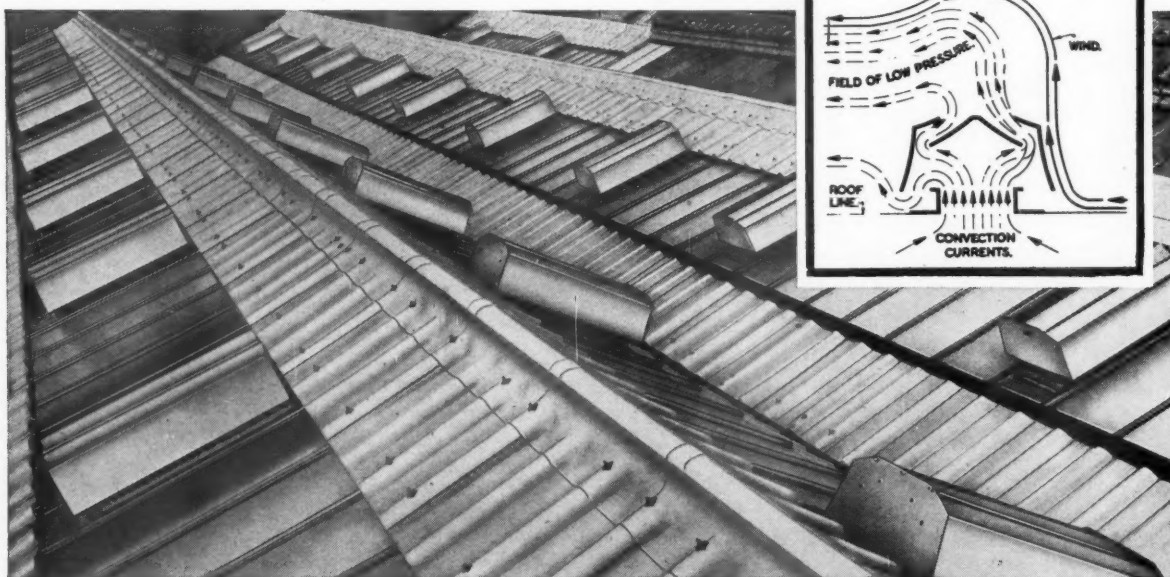


*Baroque Church at Wies, Bavaria, by Dominicus Zimmermann. From a water-colour by Frank Hoar [F]*

# Colt planning overcomes heat gains . . . at DRUMMOND BROS.

*new Guildford extension*

Architects : Brownrigg & Turner B.A., A/ARIBA  
163, High Street, Guildford, Surrey



Drummond Brothers, the well known machine tool manufacturers, were building a new extension at Guildford. In designing the Building the Architects were anxious that satisfactory working conditions would prevail at all times despite a considerable heat gain from plant and human occupancy. Furthermore, the process required a light shop necessitating considerable areas of roof glazing which, during the summer months, would add considerably to the heat gains owing to solar heat transfer.

At this stage Colt were consulted and a natural ventilation scheme was designed to ensure a temperature rise of not more than

10°F at working level during the warmest summer weather. This was achieved by installing 50 Colt SRC.2046 controllable High Duty Roof Extractor Ventilators. The photograph shows the inconspicuous nature of the ventilators which are easily fixed into the glazing bars.

The extension is now in full production and the ventilation system has proved an unqualified success.

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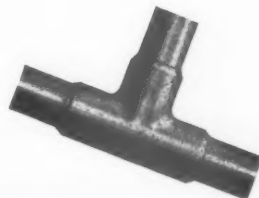
# ***"Yorkshire"***

## **TUBES and FITTINGS**

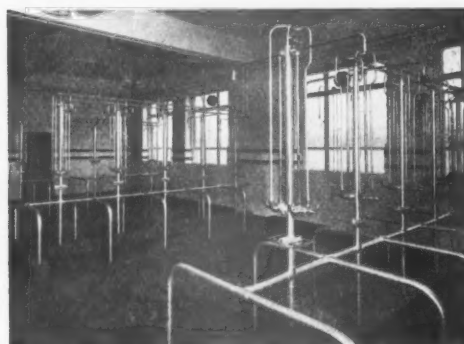
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The neat, streamlined appearance of "Yorkshire" pipelines, the ease and speed of installation and the consistent reliability and trouble-free service which they give throughout a long working life, are fully recognised by the extent to which they are specified and used for public and private building work of all descriptions, not only in this country, but throughout the world.

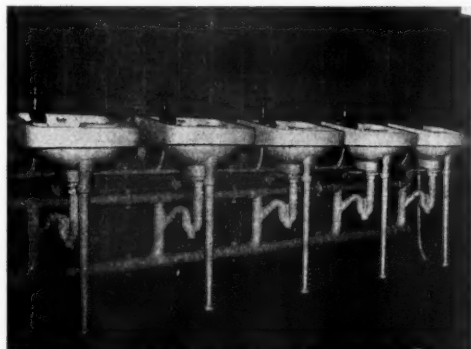
They provide the ideal installation for hot and cold water, gas, waste, heating and sanitation services, panel heating installations and underground pipelines—in fact for every service where the highest quality materials are demanded.



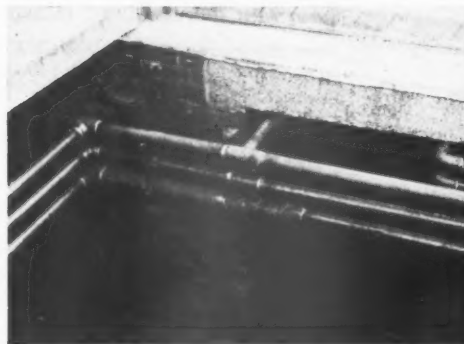
"Yorcalon" (long length) copper tubes being fabricated into panel heating coils during the reconstruction of the Guildhall in London.



"Yorkshire" installation in the shower bath rooms at Messrs. J. Blakeborough & Sons, Ltd., Brighouse, Yorks.



"Yorkshire" waste installation at Whitburn Primary School, Scotland.



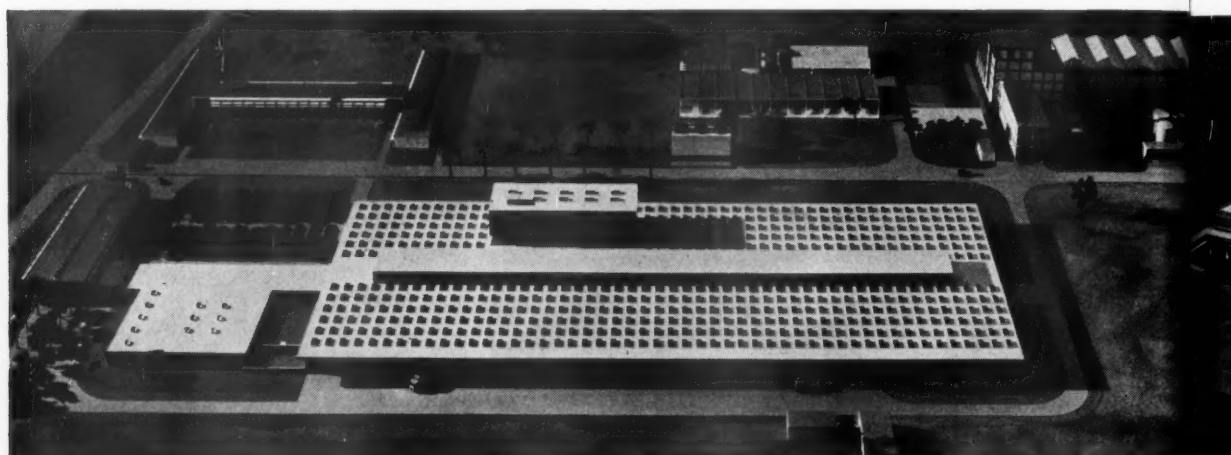
"Yorkshire" pipelines in ducts at a new school at Johnstone, Scotland.

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• **LEEDS AND BARRHEAD**

# 4 acres

of CHEECOLITE (waterproof) lightweight aerated concrete used on this roof CH



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Contractor: Messrs. Holland, Hannen & Co.  
Consulting Engineer: Bolton & Hunt

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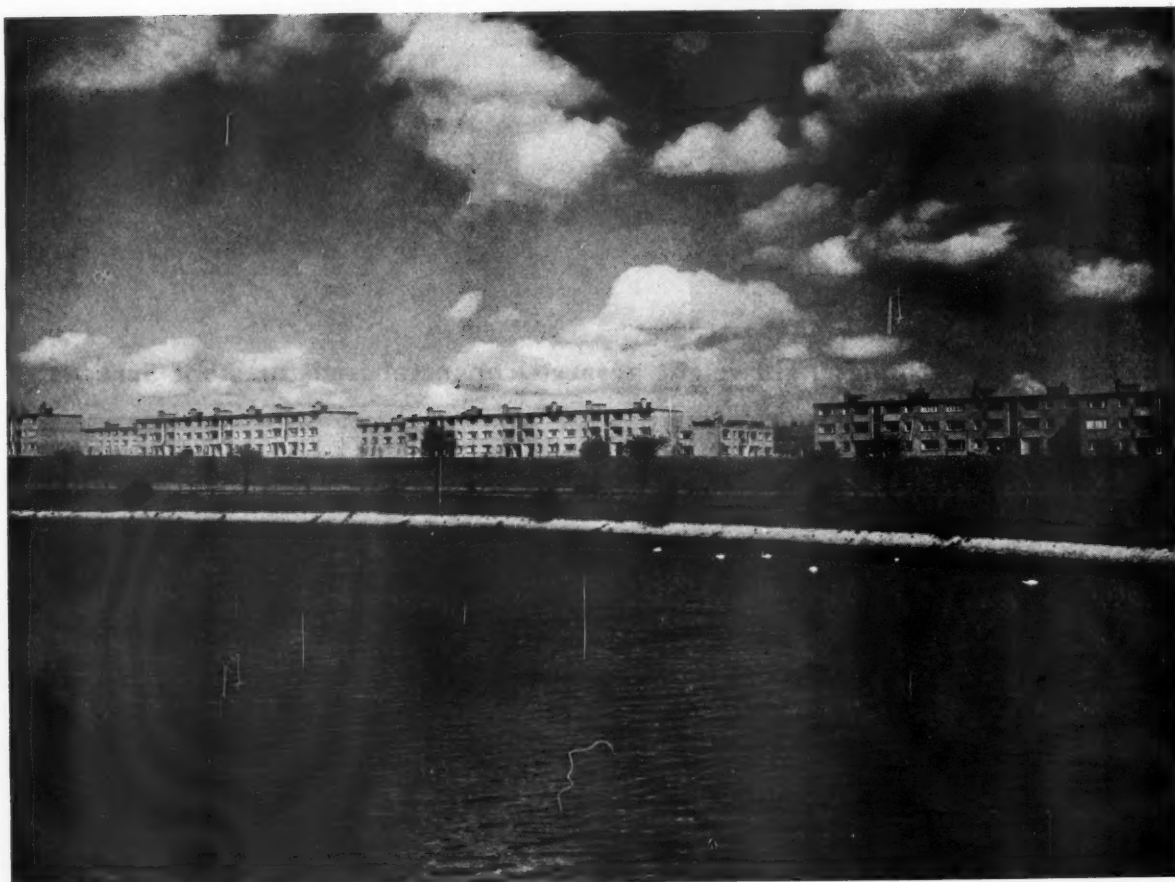
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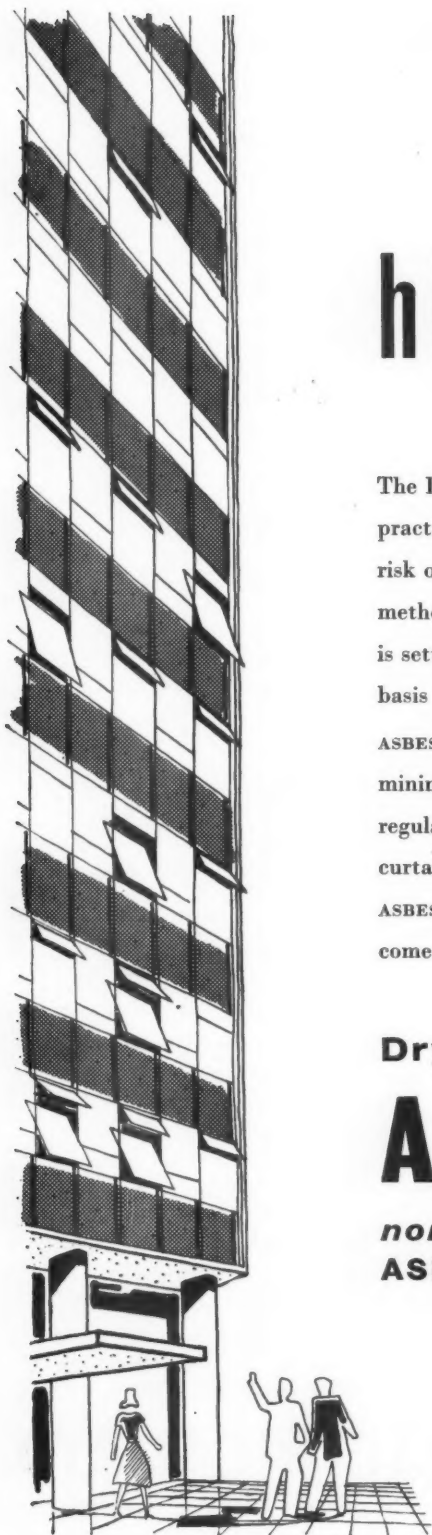
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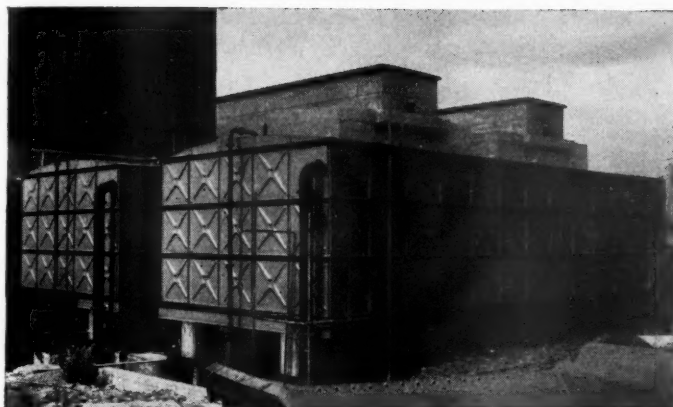
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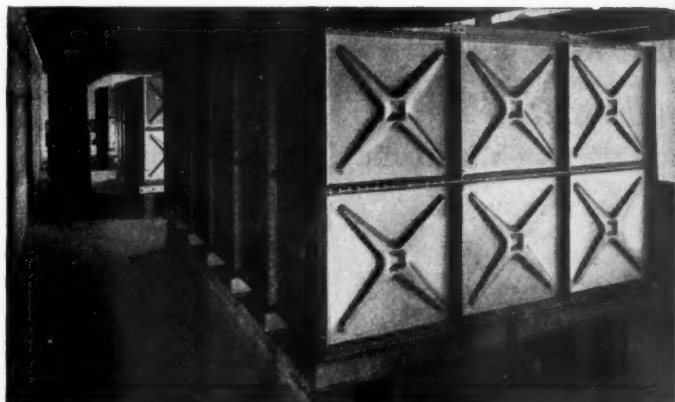


The Braithwaite unit method of construction enables Pressed Steel Tanks to be used for any liquid storage needs. Illustrated are some of the tanks supplied to Aiton and Co. Ltd. for the London Division of the British Electricity Authority at the Barking Generating Station. The Consulting Engineers are Merz and McLellan.

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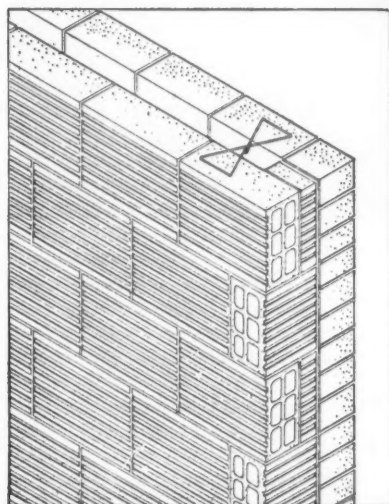
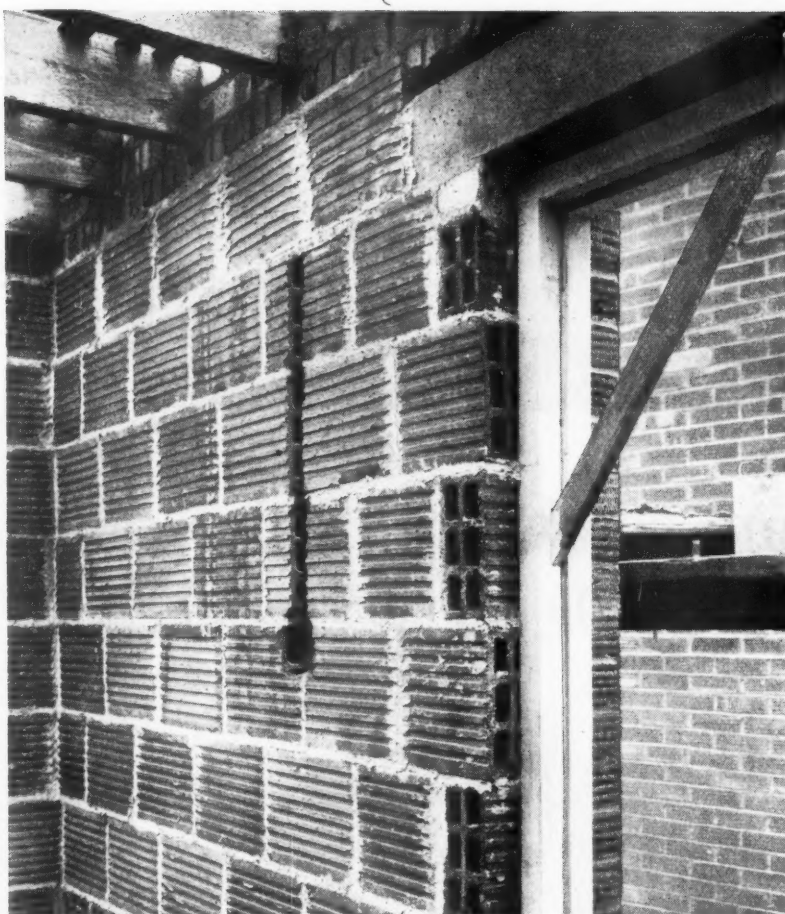


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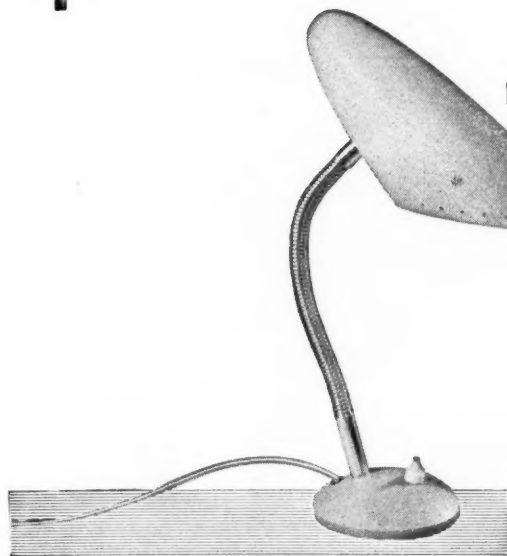
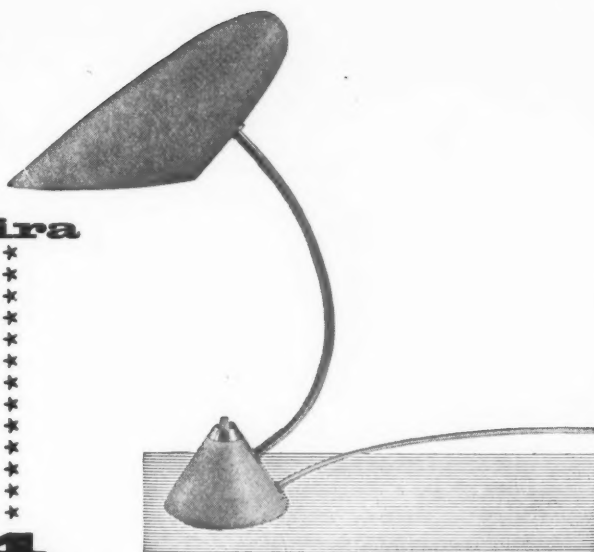
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*units*



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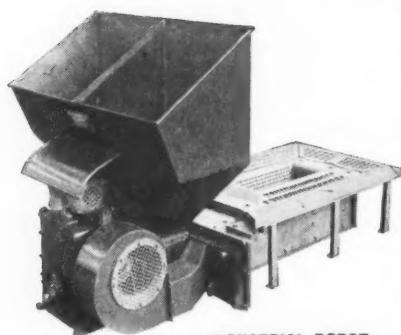
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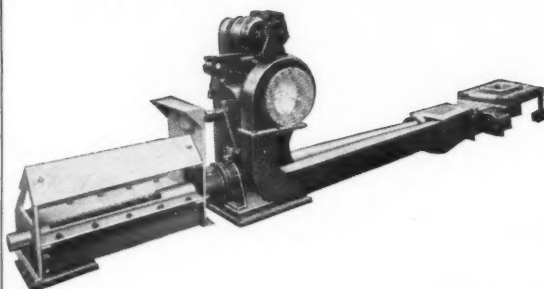
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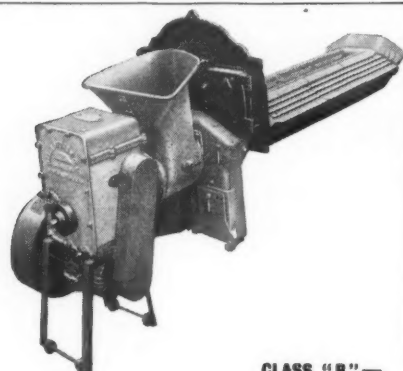
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Bunker feed. For sectional boilers in domestic hot water and space heating systems. Also for vertical boilers used in steam-raising. Feeds direct from bunker to boiler *below floor level*.



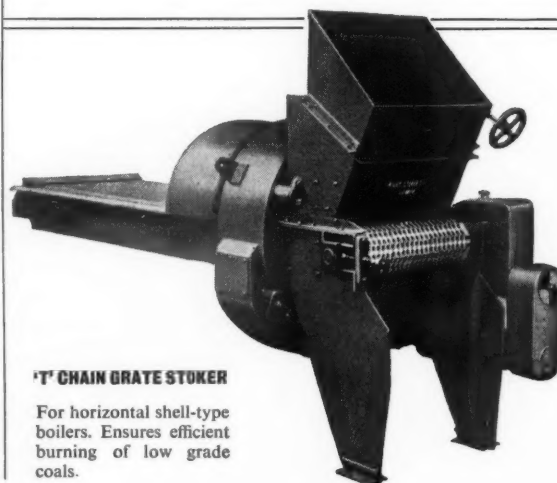
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Hopper feed. For Cornish, Lancashire and Economic boilers. Specially designed with grate to fit into circular furnace flues.



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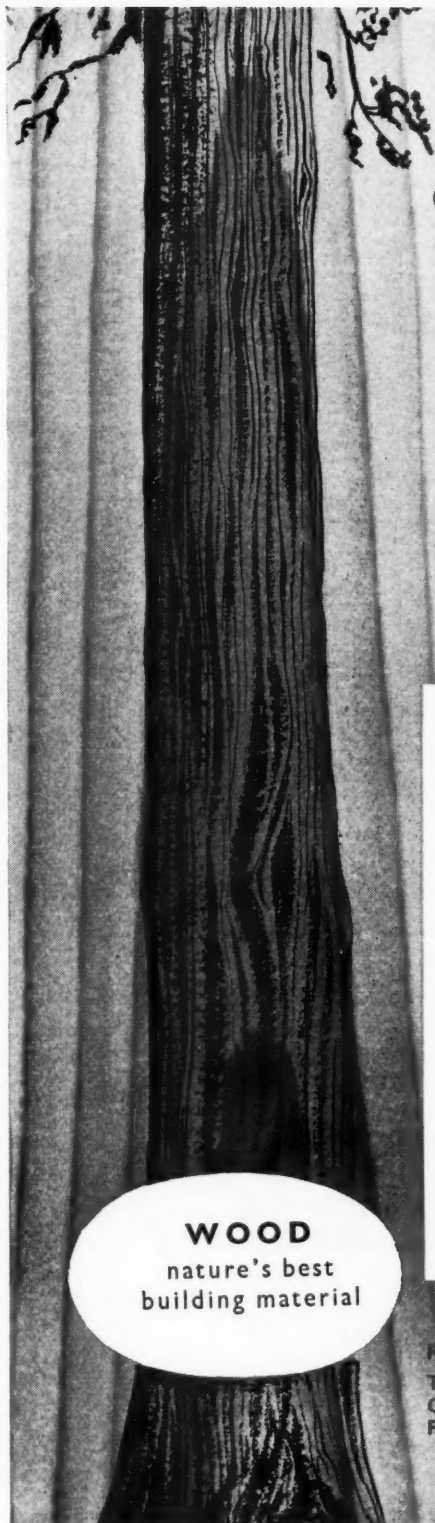
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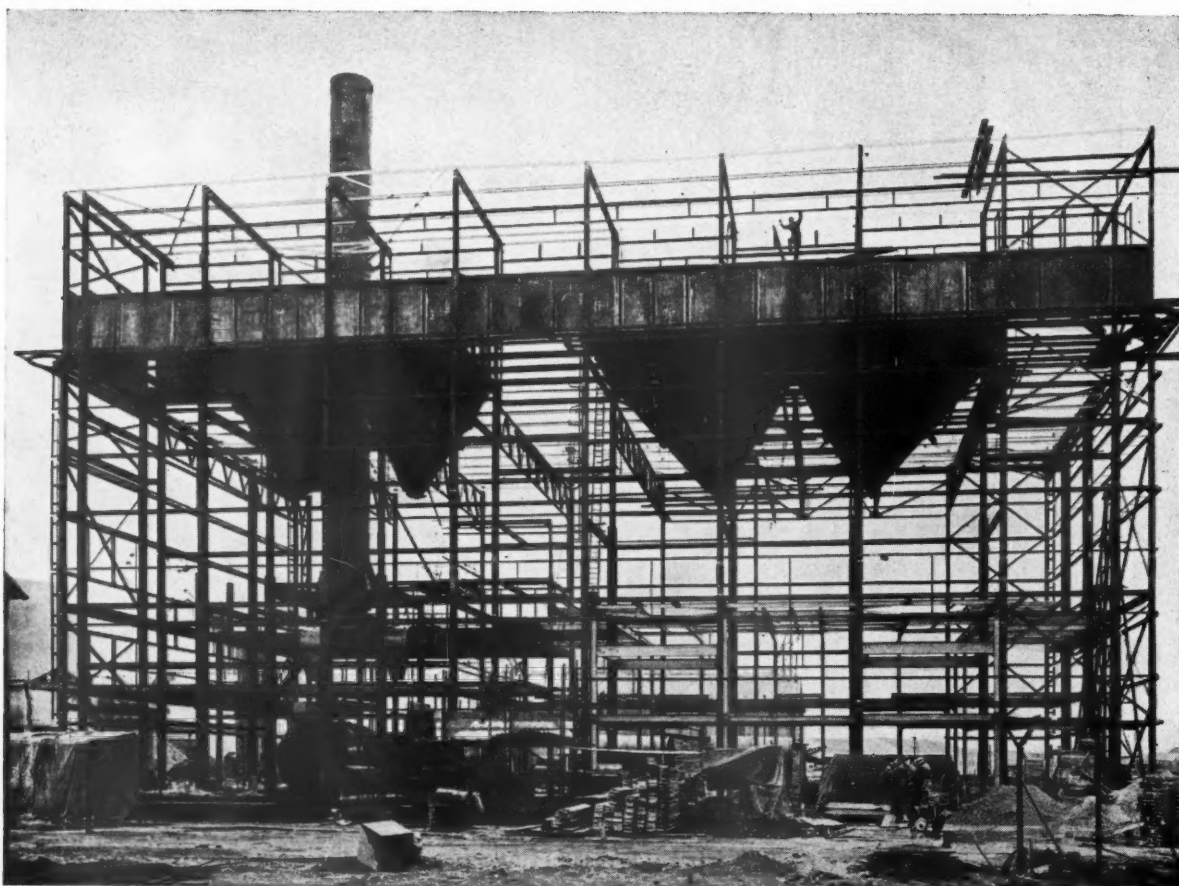
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This advertisement is one of a series featuring  
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Carburetted Water Gas Plant, Aberavon, Glamorgan, for the Wales Gas Board

Architects: T. Alwyn Lloyd & Gordon, P.P.T.P.I., F/A.R.I.B.A.

Contractors: Peter Lind & Co., Ltd.

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**“It come orf in me ’and, mum...”**

Our sympathy’s entirely with you, Mrs. B. There are some people who cheerfully spend a small fortune on redecorating, yet positively seem to enjoy living with antiquated locks and door furniture, cracked and stained finger plates, rusty postal knockers, and so on. But the more enlightened ‘furnish’ their doors as well – refitting with elegant and enduring Yale door furniture chosen from an impressive range of designs and finishes.

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**Where there’s a door there’s a need for**

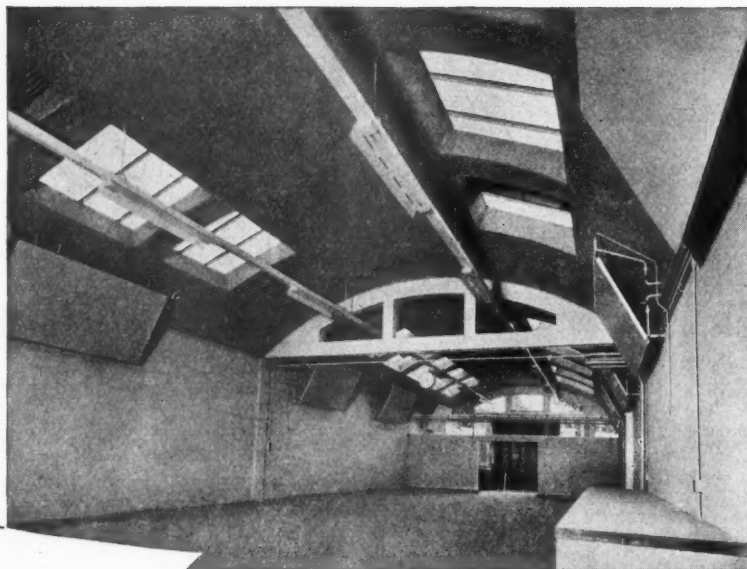
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The illustration shows a barrel vault roof at the College of Further Education, Oxford, where  $\frac{1}{2}$ " thick Sprayed "Limpet" Asbestos has been applied to the underside of the roof and also to sides and soffits of beams.

Architect: E. G. Chandler, Esq., A.R.I.B.A., A.M.T.P.I., City Architect, Oxford.



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**THERMAL INSULATION**—'k' values from 0.32 B.Th.U's sq. ft./hr./°F/in. Complies with the requirements of British Standard 1785/1951—"Thermal Insulating Materials for Buildings."

**ANTI-CONDENSATION**—Prevents condensation by maintaining the treated surfaces above the dew point temperature; also under peak conditions Sprayed "LIMPET" Asbestos, roughly pressed, will absorb several times its own weight of water.

**SOUND ABSORPTION**—Ideal for reducing the noise level.

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**FUEL ECONOMY**— $\frac{1}{2}$ " thick Spray applied to a "single skin" roof will reduce the heat loss through the treated surfaces by as much as 66 per cent.

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TURNERS ASBESTOS CEMENT CO. LTD.

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**Add a name-**



*Stonyhurst College, Whalley, Lancashire.  
Roofed with Ruberoid Roofing. Architect:  
Wilfrid C. Mangan, M.I.A.A.S.*

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Built-up roofings carried out to standard specifications may differ widely in quality of materials and workmanship. But a specification which stipulates that the work is to be carried out by The Ruberoid Company Limited ensures the highest standards every time.

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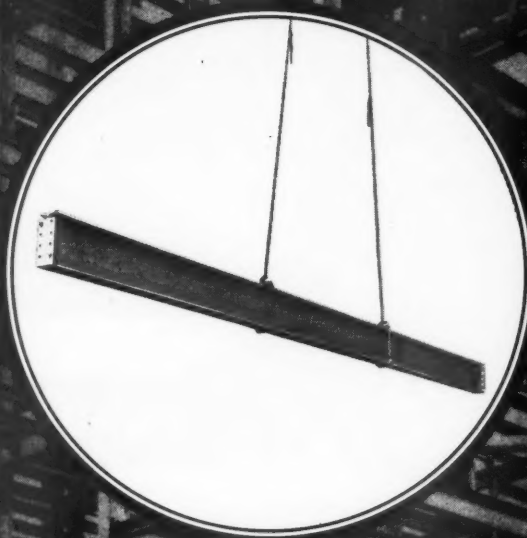
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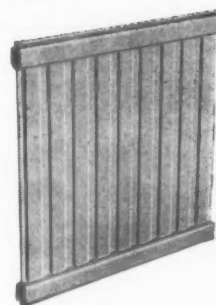
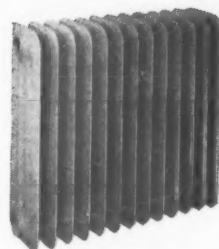
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Panel radiators are also a Stelrad feature, and our recent four-angle bay window model is of special interest. Our catalogue will give you all the information you are likely to require, and a copy will gladly be sent you on request.



**STEEL RADIATORS  
LIMITED**

Top illustration shows a three column Stelrad and below a wall radiator.

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**Meet Mesdemoiselles Potter, Pettigrew, Jones and Unwin**

They are what is known as a pool. Not one of those peaceful pools that encourage deep reflection and concentration: contrariwise. While May Potter is pounding out a report on her noiseless, Sheila Jones is telling Mavis Pettigrew about last night, while Phyllis Unwin is carrying on with difficulty a telephone conversation about an important client who's lost in the lift or somewhere. If only a girl could *hear*. Shut up, Sheila, do!

No, no, Miss Unwin! Don't blame Sheila, blame the architect who forgot Fibreglass sound absorption when he designed the tower of babel in which you work. This easily-installed, everlasting material will enhance concentration, save time lost in repetition, reduce errors and improve tempers out of all proportion to its modest cost.

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# PLIMBERITE in roof construction

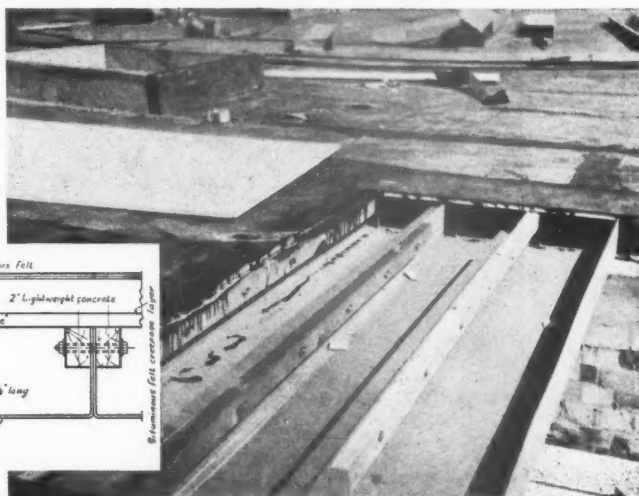
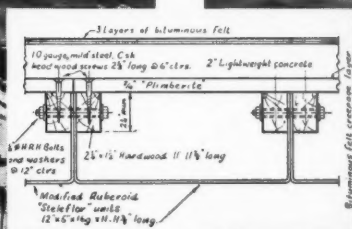
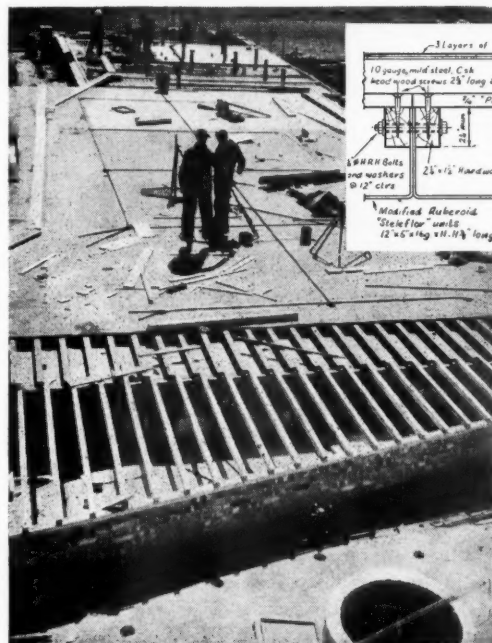
at the new Radio Research Station at Datchet.

Designed by the Chief Architect's Division,  
Ministry of Works, for the Department  
of Scientific and Industrial Research.

Main Contractors: Messrs. A. Roberts & Co. Ltd.,  
79 Eccleston Square, London, S.W.1

$\frac{3}{4}$ " PLIMBERITE Boards in the standard size  
8 ft. x 4 ft. were used for decking the flat roof of the  
new Radio Research Station at Datchet. The photo-  
graphs show a part of the 45,000 square foot roof  
under construction, and the drawing gives a detail  
of the general design of the roof structure.

Covered with three layers of bituminous felt,  
 $\frac{1}{4}$ " PLIMBERITE was also used for covering in  
the roof heating ducts, over timber stud framework.



$\frac{1}{4}$ " PLIMBERITE Boards can also be used on pitched roofs as a  
base for the outer roof covering, usually over rafters at 16" centres.

$\frac{1}{2}$ " PLIMBERITE makes an excellent lining to a roof, screwed to  
the underside of the rafters (together with felt or insulating material  
if desired).

During roof construction of any kind with PLIMBERITE, it is  
important that the boards be protected from the rain until the outer  
roof covering is laid.

The many other uses of PLIMBERITE are dealt with in  
our Technical Brochure and in the PLIMBERITE REBOND  
PARTITIONING SYSTEM Booklet.

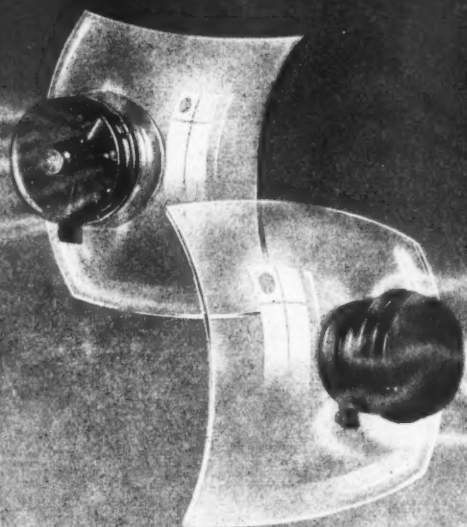
These publications, also prices and the names of local stock-  
holders, will be supplied on request.

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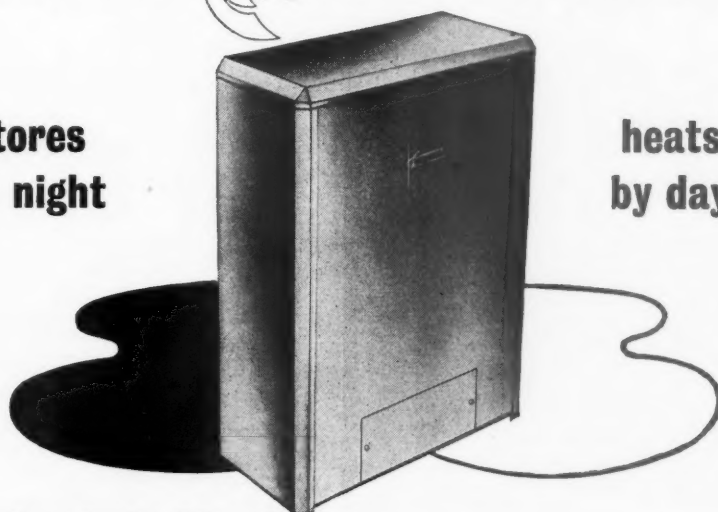
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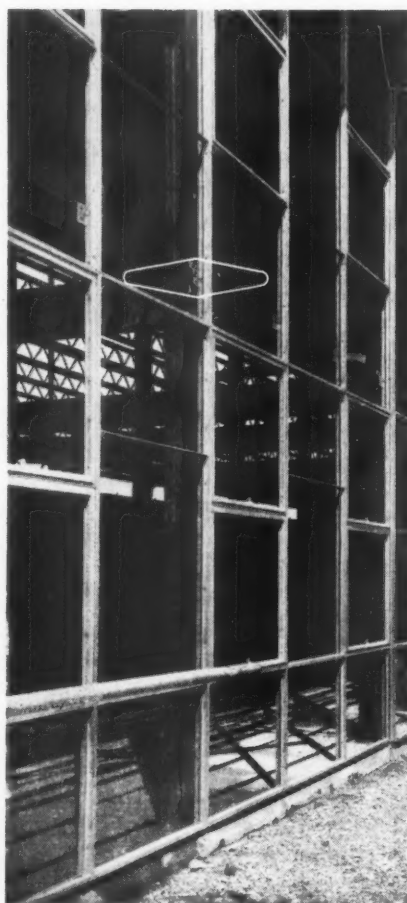
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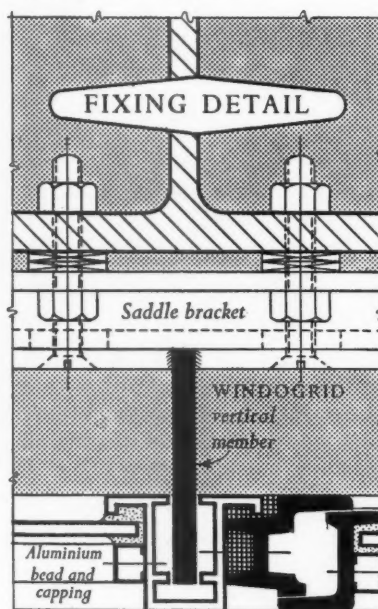
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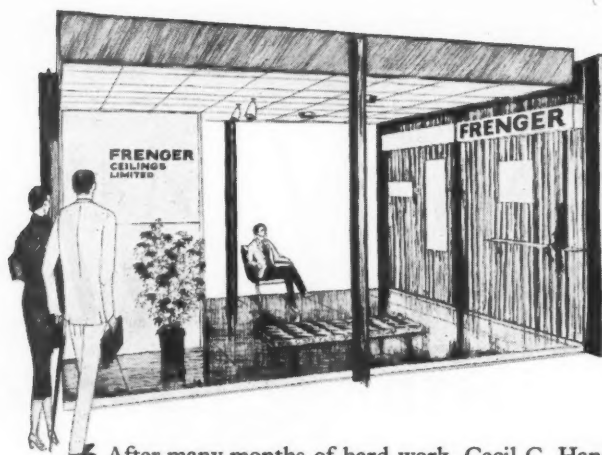
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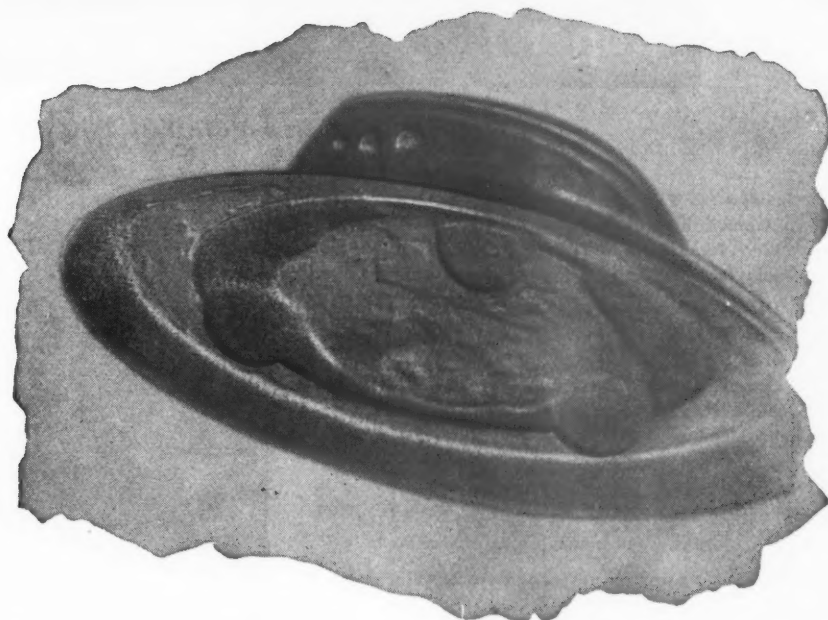


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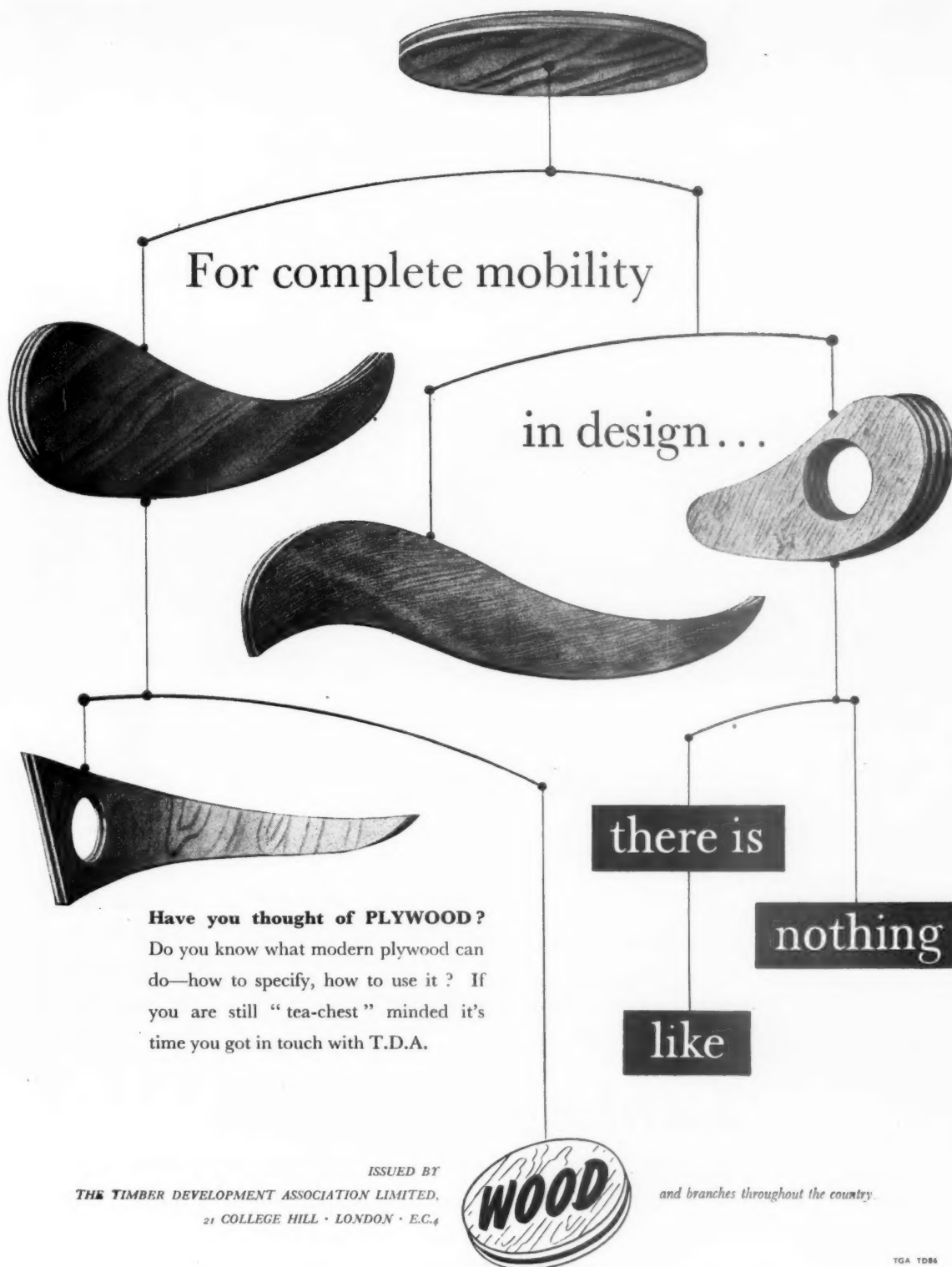
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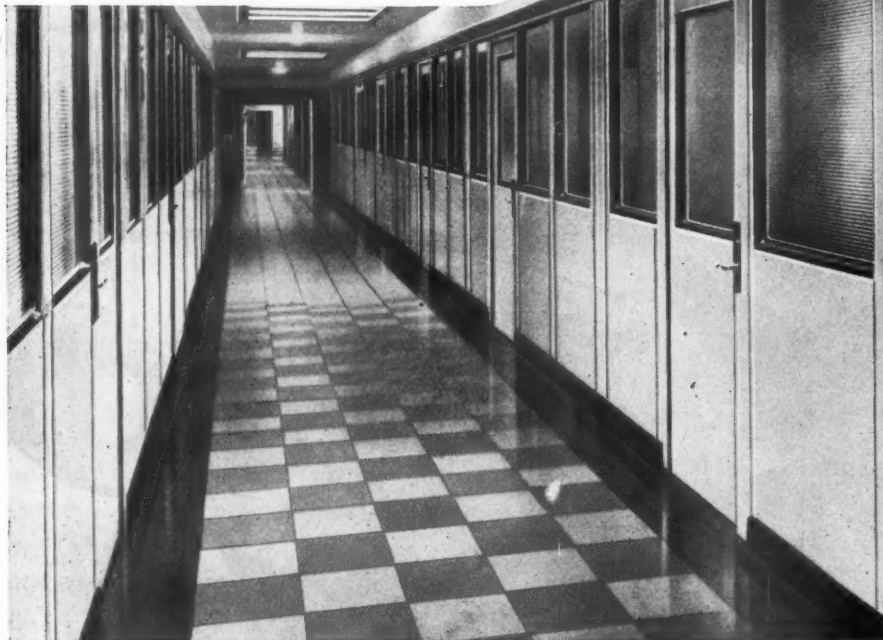
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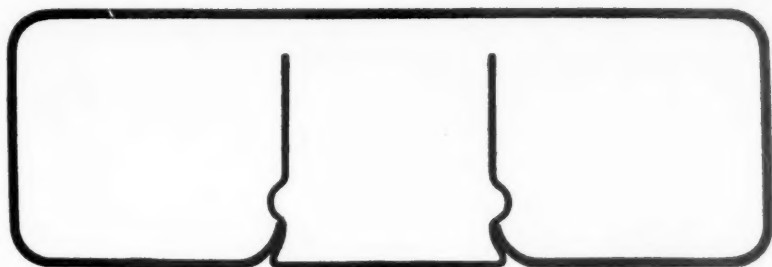
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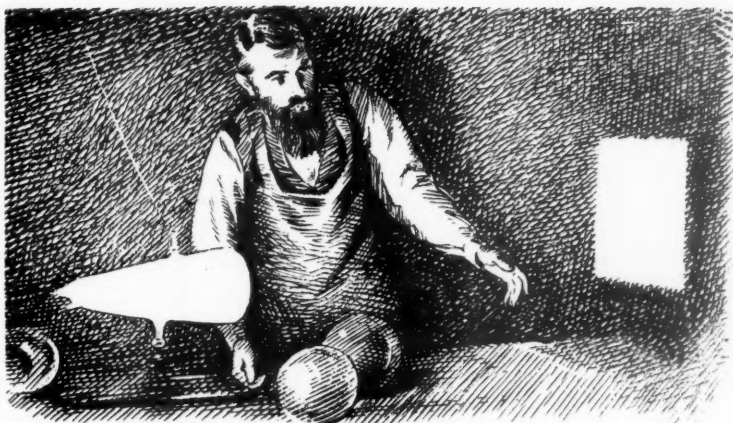
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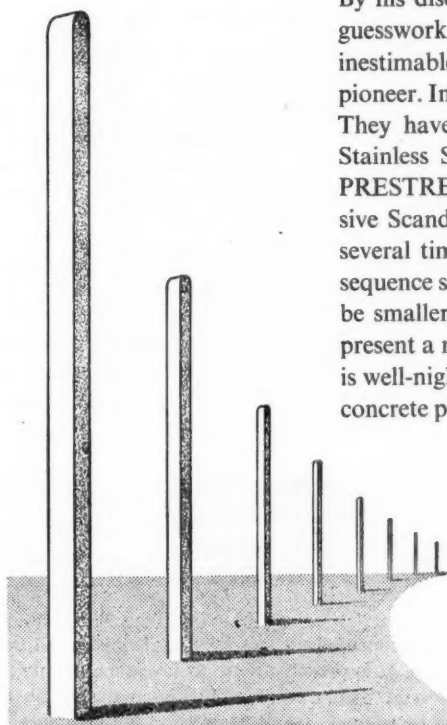


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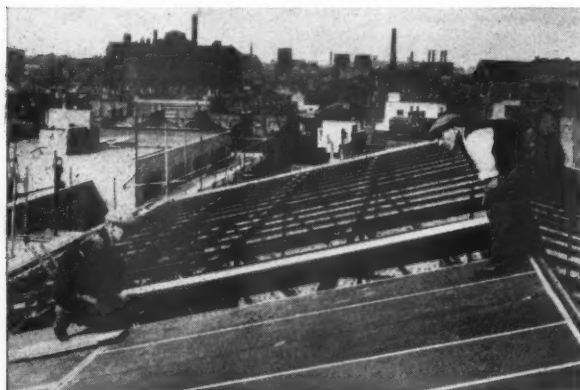


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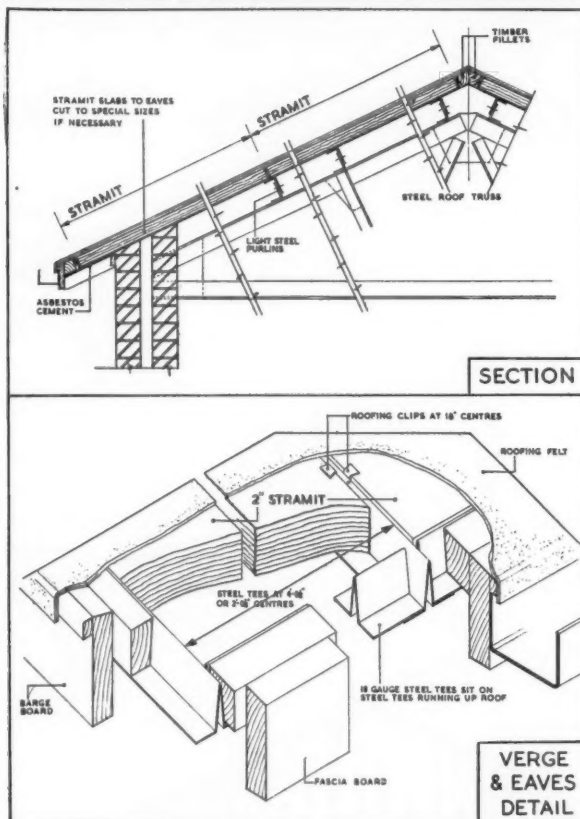


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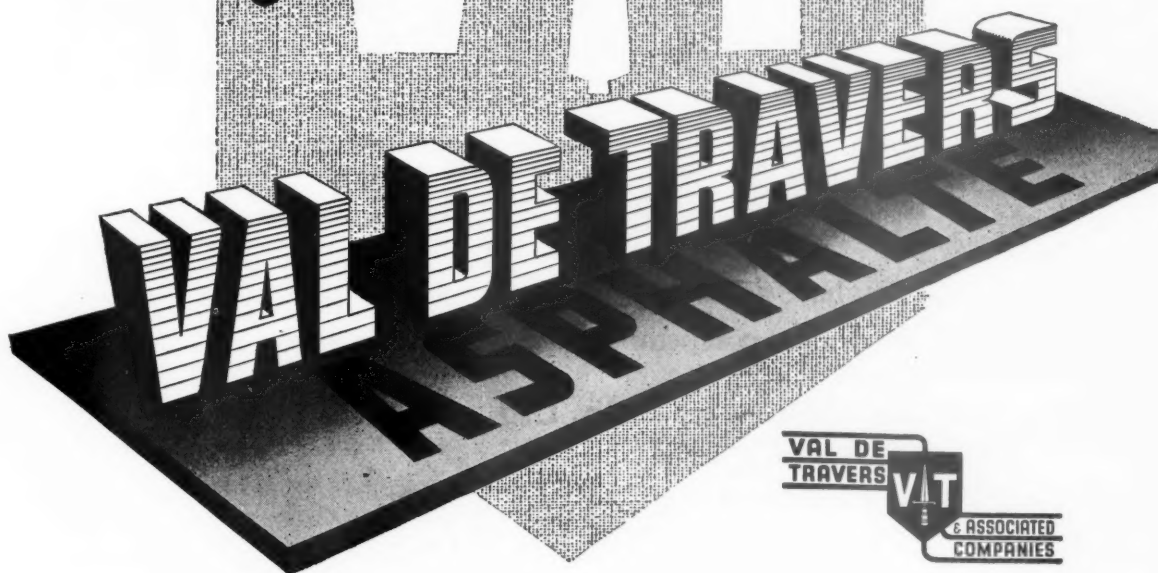
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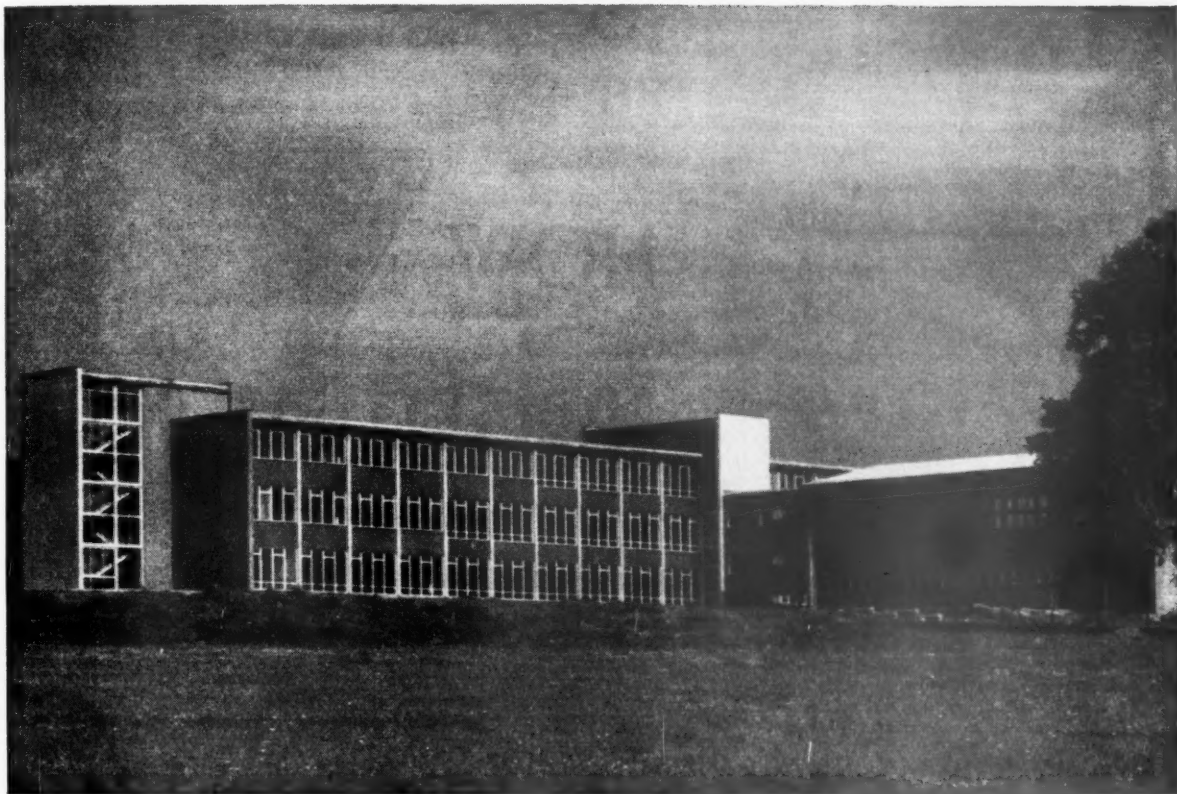
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OCTOBER 1955

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## The Inaugural Meeting

Members are reminded that the 1955-56 series of general meetings and lectures begins on Tuesday 1 November when the President will deliver his Inaugural Address. He is also to present the London Architecture Bronze Medal to Dr. J. L. Martin, M.A. [F], Architect to the London County Council, in respect of a group of three blocks of flats at the Ackroyd Estate, Wandsworth. This scheme was illustrated in the August JOURNAL. The President will also present diplomas of Distinction in Town Planning to Mr. A. G. Sheppard Fidler, M.A. [F] and Mr. Frederick Gibberd, C.B.E. [F]. The President himself is to receive the Diploma of Honorary Fellowship of the American Institute of Architects from Mr. Ralph Walker, Past President of the A.I.A.

## Second Conference on the Design of Health Buildings

The Royal Society of Health (formerly the Royal Sanitary Institute), with the co-operation of the R.I.B.A., have arranged a one-day conference to be held at their headquarters, 90 Buckingham Palace Road, beginning at 11 a.m. on Wednesday 16 November. This is in accord with the views expressed following the successful inauguration of the first conference held at the R.I.B.A. last year, and the theme will be 'Clinics and Hospital Out-Patient Departments'. Papers will include the medical requirement of the local authority and hospital board, as well as the architectural problem from both British and European points of view.

While the Conference is intended primarily for post-graduate architects, members of the R.I.B.A. are invited to apply for programmes to the Secretary of the Royal Society of Health. This will ensure that they receive advance copies of the papers.

## Discussion on Building Maintenance

Sir Thomas Bennett, K.B.E. [F] will take the chair at a meeting to be held at the Building Exhibition on 22 November at 6 p.m. when 'Building Maintenance' will be the subject for discussion. The principal speakers will be Mr. A. W. Yeomans, M.I.O.B., Mr. W. T. Jackson, M.B.E., A.M.T.P.I. [A], (Director of Maintenance Services, Ministry of Works), and Mr. A. W. Cleeve Barr, Dipl.Arch. [A], (Chief Development Officer, the London County Council). Admission will be free; tickets are obtainable from the Technical Information Officer, the Ministry of Works, Lambeth Bridge House, S.E.1. The discussion is being arranged by the L.C.C. Brixton School of Building in collaboration with the Ministry of Works.

## The Christmas Holiday Lectures

The informal lectures for boys and girls, given at the R.I.B.A. during the Christmas holidays, will be by Mr. William Allen [A], Chief Architect of the Building Research Station. Their title is 'Architecture Inside Out' and they will cover informally the technical ideas and principles which operate in the design and construction of buildings and how they are applied. The boys and girls will learn how the physics and chemistry which they study at school come to reality and practical use in all buildings.

There are to be three lectures. One will cover light, heat and acoustics; another will deal with a variety of building materials and the third with the structure of buildings and their erection. Mr. Allen proposes to use a variety of apparatus—always a popular feature in lectures to the young—as well as films and slides; his subject will range widely from town planning down to the microscopic structure of materials.

The lectures are for boys and girls of 13 years of age and upwards and are to be given at the R.I.B.A. at 3 p.m. on 2, 4 and 6 January 1956. Tickets free on application to the Secretary R.I.B.A. after 3 November; envelopes to be marked 'Christmas Holiday Lectures' in the top left-hand corner. Owing to the limited space available, it is requested that applications should not be made for more tickets than can be used.

## Russian Delegation Studies British Architectural Education

On 26 September a party of Russian architects visited the R.I.B.A. to examine British methods of architectural education. They were Mr. V. A. Kucherenko, who is Deputy Prime Minister of the U.S.S.R. and Chairman for the State Committee for Construction Affairs, Mr. Gushchin, Deputy Minister of Construction, Mr. Dudorov, Chief Adviser to the State Committee for Construction Affairs, Mr. Loveiko, Chief Architect of Moscow, Mr. Kolenkov, Assistant to Mr. Kucherenko, Mr. Gvozdev, Professor of concrete, Mr. Skramtaev and Mr. Davydov.

The party were welcomed by Mr. Philip Freeman [F], Chairman of the R.I.B.A. Board of Architectural Education, and conducted to the Henry Florence Hall where drawings from exempted schools of architecture were on view. Mr. Michael Patrick [A], Principal of the A.A. School of Architecture, and Mr. J. S. Walkden [F], Head of the School of Architecture, the Polytechnic, Regent Street, explained the British system of architectural education and answered numerous questions. Earlier in the day the party had visited the L.C.C. Brixton School of Building and lunched with the Minister of Works.

### The Building Exhibition

The Building Exhibition, larger than ever before, is to be open at Olympia from Wednesday 16 November to Wednesday 30 November inclusive. Enclosed in this JOURNAL are tickets which members are asked to make a special point of using to enter the exhibition because each one presented at the turnstiles ensures a donation of 3s. 6d. to the Architects' Benevolent Society. The tickets have been generously presented and the donations arranged by Mrs. M. A. Montgomery [*Hon. A.*]. Any member who mislays his ticket can obtain another on application to the A.B.S., 66 Portland Place, W.1.

Mrs. Montgomery is also providing the usual room for the R.I.B.A. Club—over the Addison Road entrance—where members may rest and obtain refreshments. The tear-off slip on the admission card entitles the holder to tea in the Club. It should be detached and retained when the admission card is presented at the turnstiles. The tea also is provided by Mrs. Montgomery.

The stand of the Architects' Benevolent Society is to be in the gallery near the entrance to the R.I.B.A. Club. Christmas cards will be on sale there. In addition to buying cards, members can make their donations to the President's Christmas Appeal Fund; a notice of this will be inserted in the November JOURNAL, which will be published during the run of the exhibition. They can also order tickets for the A.B.S. Ball which is to be held at Grosvenor House on Thursday 8 December.

### Journal Editorial Staff

Consideration is being given to the appointment of an Assistant Editor of the JOURNAL. The intention is that the candidate appointed shall serve for a few years as Technical Assistant Editor with a view to succeeding the present editor on his retirement. While it is desirable that a candidate should be a qualified architect this is not essential, but he should have a reasonable knowledge of building techniques both new and traditional and the ability to write good English. A qualified architect if appointed to the post would not be permitted to undertake private architectural practice.

Any member or Student interested should write to the Secretary, R.I.B.A., giving a brief outline of his qualifications and experience, asking for further particulars and stating his age.

### The Design Centre of the Council of Industrial Design

When in 1944 it was proposed that a Council of Industrial Design should be set up, one of the recommendations connected with the proposal was that the Council should 'establish and finance a pavilion of British industrial art as a permanent building with changing exhibitions of the best modern design'.

Although the name 'Pavilion' is altered to 'The Design Centre', that recommendation will be complied with next spring, when the Design Centre for British Industries will be opened at 28 Haymarket, London. In it will be displayed selections from the DESIGN REVIEW, which used to be called the Stock List, chosen by a committee meeting weekly under the chairmanship of Sir Gordon Russell [*Hon. A.*], Director of the Council of Industrial Design, supported by a panel of council members, two independent consultants, and the Council's industrial officers. Industrial assessors have been nominated to assist this committee.

The Design Centre will not be in competition with any existing trade exhibitions nor with retail shops, as nothing will be sold across the counter. 'But to buyers, retailers and the public alike it will offer a service not to be found anywhere else—a place where they can look before buying, where they will see well-designed things from many industries shown alongside their equals. For specialists such as architects, local authority purchasing officers, hotel keepers and educationalists the Centre will offer an easy reference to the best designs on the market.'

### The Board of Building Education

The inaugural meeting of the Board of Building Education—whose establishment we announced in the June JOURNAL—was held at the Institute of Builders on 20 September. The Board, which has been set up by the Institute of Builders with the support and collaboration of the National Federation of Building Trades Employers, is to advise on methods and standards of technical education and practical training for executive, administrative and managerial positions in building.

The Chairman is Mr. F. L. Wallis, O.B.E., J.P., F.I.O.B., President of the Institute. Mr. Harvey G. Frost, O.B.E., F.I.O.B., President of the National Federation of Building Trades Employers, is Vice-Chairman. There are nine members representing the Institute of Builders and seven representing the National Federation of Building Trades Employers.

At the first meeting it was decided to invite each of the following to appoint a representative to the Board: the Ministry of Education, the Ministry of Works, the R.I.B.A., the Standing Committee of Vice Chancellors and Principals of the Universities of Great Britain and Ireland, the Association of Principals of Technical Institutions, the Association of Teachers in Technical Institutions, and the National Federation of Building Trades Operatives.

A committee of study was set up to carry out a survey on a national basis of the present arrangements governing higher technological education and training and the facilities now available. The Board is to meet again on 8 November when it may possibly consider the eventual appointment of an independent chairman.

### Architect Deputy Lieutenant for Lanarkshire

Major Lennox D. Paterson, T.D., D.A.(Glas.) [F], has been appointed a Deputy Lieutenant for Lanarkshire.

### Architects Abroad

The experience of another summer confirms the suspicion that architects, whatever their nationality, encounter much the same difficulty when they arrive in a foreign country. While historical buildings are generally well documented and easy to find, recent work, and especially work still under construction, is far more elusive and often can only be tracked down with the help of a personal contact in the appropriate town or city.

The Royal Institute is able to be of some service in a dual capacity, arranging such contacts both for the foreign visitors who arrive from all over the world and for its own members travelling abroad. The first task is the easier of the two and the Royal Institute is very grateful to those members who have assisted by acting as hosts and guides to foreign visitors. The second task, that of locating friendly and knowledgeable foreign architects able and willing to place themselves from time to time at the disposal of members visiting their part of the world, is more difficult and can only be carried out satisfactorily through the continuous help of members who let the R.I.B.A. know of contacts they have made abroad which are likely to be useful to other members in the future. This information is of great value and members are asked to supply it whenever possible.

The travelling facilities supplied by the Institute to members and foreign visitors—Travelling Cards, Council of Europe Cultural Identity Cards and letters of introduction to foreign societies and to Honorary Corresponding Members—continue to be extensively used and good reports are received of their effectiveness. It is hoped that all these facilities will continue to help members.

### R.I.B.A. Diary

1 NOVEMBER. 6 P.M. General Meeting. President's Inaugural Address. Presentation of London Architecture Bronze Medal for 1954 to Dr. J. L. Martin [F].



Fig. 1. Typical standard permanent sign at the entrance to an estate

## L.C.C. Technical Development and Research

When the Housing Division of the London County Council was reconstructed in 1950, a special Development Group of some eight to ten architects was created. This group was responsible for the introduction of new 'type plans', for the general adoption of the cross wall system of load-bearing brick construction and for the preliminary designs for the first of the major L.C.C. schemes of mixed development, at Wimbledon and Roehampton. With the rapid growth in the size of the new Division, it became clear that greater flexibility in organisation was needed in order to maintain a spirit of enthusiasm and initiative in all sections, and it was decided to keep the number of 'back-room boys' to an absolute minimum and to attempt to spread development work throughout the Division. A Senior Architect was appointed to co-ordinate the work of development and research in regard to new types of design, new techniques and methods of construction, new materials and components applicable to multi-storey housing.

A small Development Group, now only two or three strong, is responsible for the preparation of standard drawings and information sheets, and for the design of components suitable for standardisation and for bulk purchase. This Group is closely linked with the Materials Section and with the Direct Purchase Organisation. It also works in close collaboration with the B.R.S. and with Dr. S. G. Burgess, the Scientific Adviser of the L.C.C. who has an excellent research and testing laboratory. Various experiments have been made in the use of 'standard drawings' for constructional details, but in the main these are now limited to drawings affecting the installation of standardised components, and wider use is made of information sheets for technical co-ordination.

An outstanding example of development work by the L.C.C. in collaboration with the B.R.S. and Mr. J. Croft, Chief Inspector of the Council's Medical Officer's Department, has been the general introduction into multi-storey housing of the 'single-stack' system of plumbing. This has resulted in a saving of £10 to £12 per dwelling. Again, in collaboration with

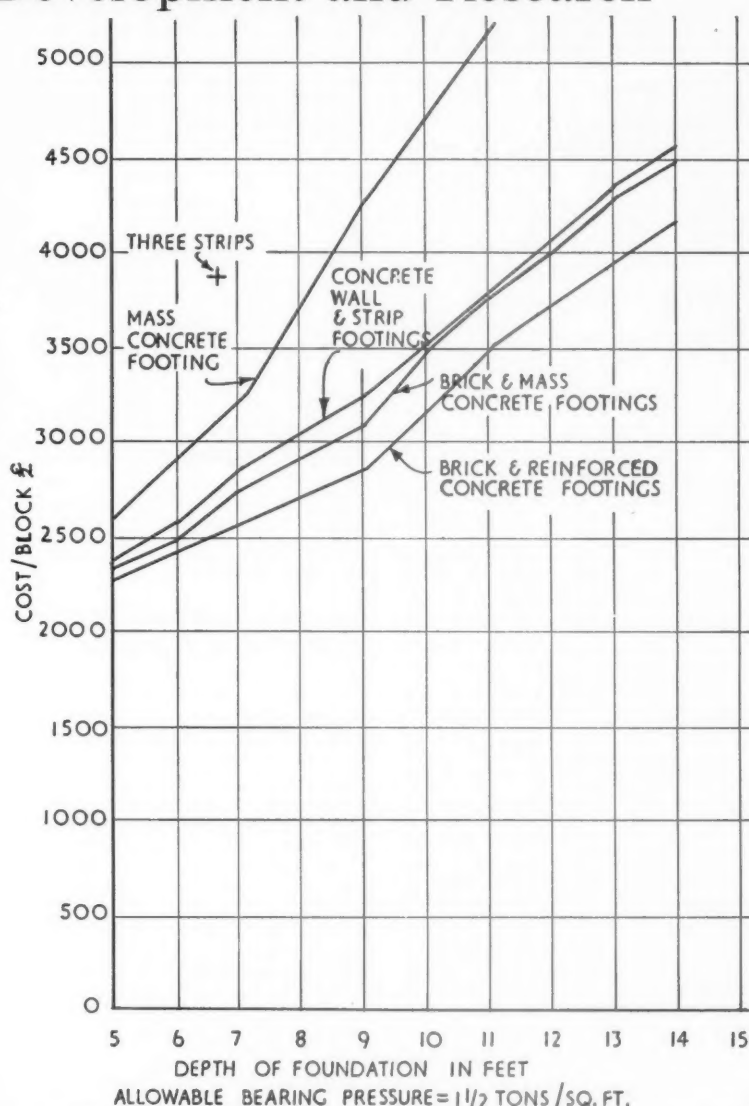


Fig. 2. Graph showing comparative costs of various kinds of foundations for a typical block of flats



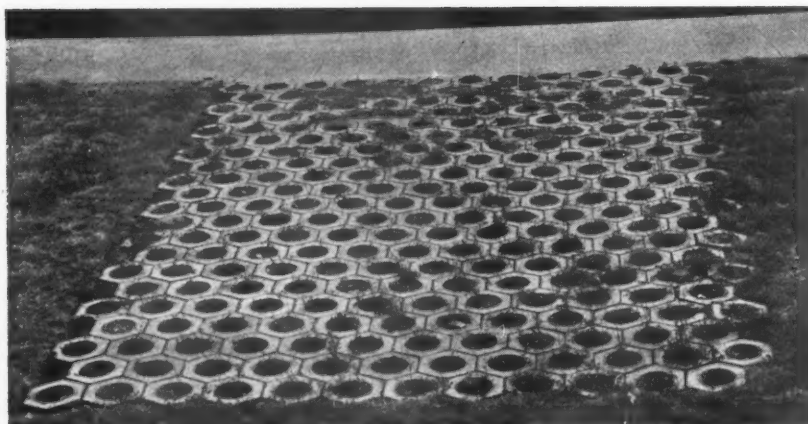


Fig. 3. Hexagonal grassed paving designed to provide access roads for the London Fire Brigade 100 ft. turntable ladders around tall blocks in places where concrete or tarmac roads are not otherwise required. The photo shows the paving before grassing; after grassing the pattern is barely discernible (see also Fig. 4)



Fig. 5. The combined pivot-hung and side-hung casement is cheap to make. An E.J.M.A. type section has a hardwood fillet glued and screwed to the frame for the top half and to the sash for the bottom half. The hinges are 6 in. by 1 in. standard back flaps sherardised (no friction pivots). The slots at the head are for permanent ventilation

manufacturers, the Group has designed gas and electric drying cabinets, for bulk purchase, at a cost much below that of equivalent cabinets commercially available. The L.C.C. standard wooden window range, which is now being used by a number of other authorities and by private architects, has introduced into low-cost housing an ingenious version of the popular large Swedish-type pivot-hung window, which can easily be cleaned and reglazed

Table I

Element	Percentage of Total Cost
Foundations .. .. .	4
Drainage and site works ..	8
Structure .. .. .	20
External walls and windows	14
Partitions, stairs, doors, cupboards, ironmongery, etc.	14
Public stairs, lifts, refuse chutes, balconies, etc. ..	15
Services .. .. .	20
Finishes and miscellaneous	5



Fig. 6. The pivot window from inside. The concealed sliding-friction stays at either side at the head limit the opening for safety reasons to 5 in.; but for cleaning purposes the stays can easily be unhooked and the windows turned through 180 degrees

from inside. Experiments on 'branched' flues and 'branched' natural ventilation systems, which offer considerable economies for the future, are now under construction.

This article describes only some items of development work and research from the L.C.C. Housing Division, and it should be realised that these items do not represent finality. In some cases they are only compromises, at an interim stage of development. New problems continually arise as new materials are developed and housing design progresses. From the development point of view an attempt is made to keep all aspects of the work continually under review. Table I gives a rough indication, from a typical block of flats, of the breakdown of costs between the major elements. It will be seen from the selection of items reviewed and listed in the table that the work covers the whole field.

The Architect to the Council is Dr. J. L. Martin, M.A., Ph.D. [F], the Principal Housing Architect, J. Whitfield Lewis [A],

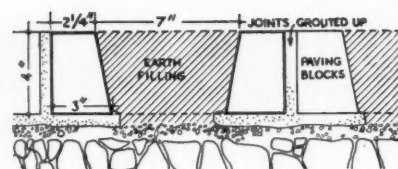


Fig. 4. Section of pot paving (see Fig. 3)

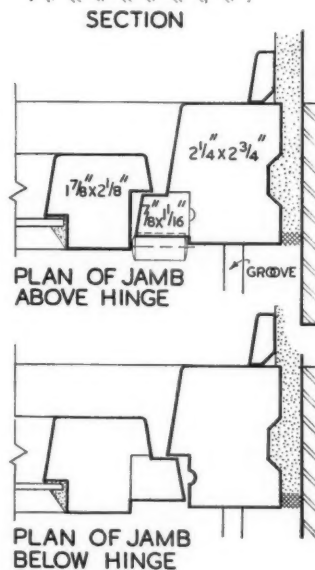
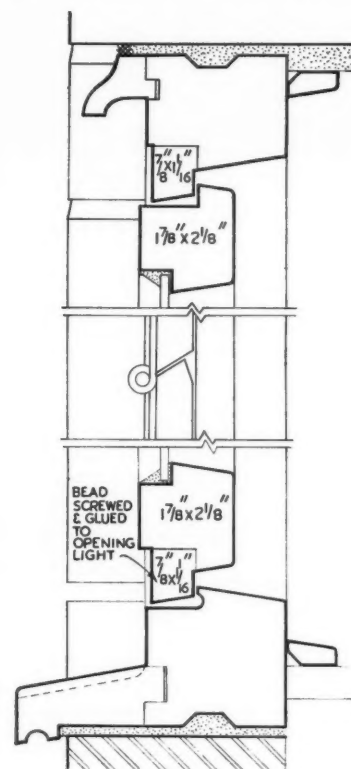


Fig. 7. Sections of pivot window members



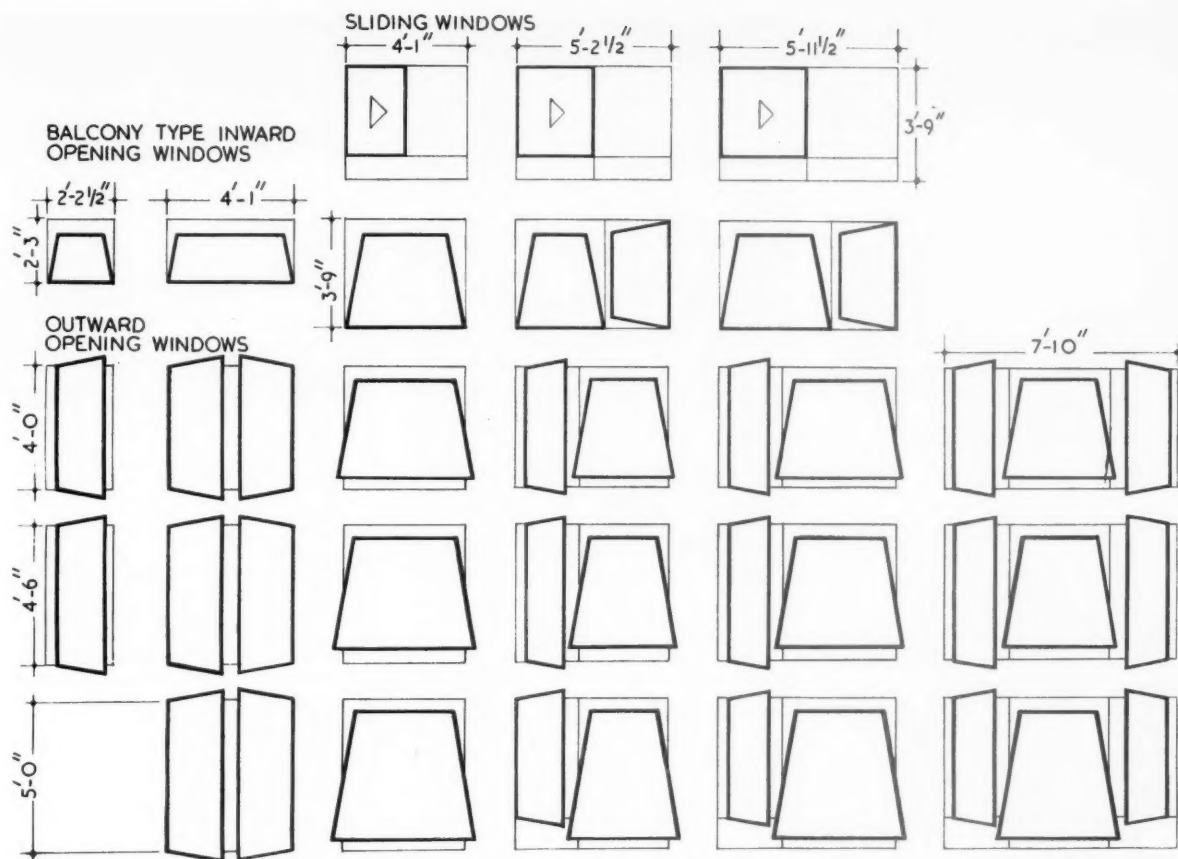


Fig. 8. A selection from the standard range of wooden windows

and the Senior Architect in charge of Development and Research, A. W. Cleeve Barr [4]. Members of the staff who have contributed to the work described in this article are: O. J. Cox [4], R. Purdew, A. Rudowski, and H. G. Stantiall [4].

#### Foundations

**Alternative Foundations.** Foundations of typical brick cross-wall blocks of flats have until recently been designed as mass concrete strips. A re-examination of a number of typical cases showed that, given steel availability and no marked increase in price, money could be saved in many cases by using reinforced concrete strip foundations. A number of graphs were worked out showing the comparative cost of various kinds of foundation for typical blocks of flats, at all depths from 5 ft. to 15 ft. and for various bearing pressures between 1 ton and 2½ tons per foot super (Fig. 2).

**Pulverised Fuel Ash.** In co-operation with the British Electricity Authority and with a firm of building contractors, an experiment was carried out in the substitution of pulverised fuel ash for 20 per cent of cement in mass concrete foundations. The ash was supplied to a guaranteed specification, and ready bagged by the B.E.A. The disposal

of this ash, which is a waste product of power stations using pulverised fuel, is a national problem. Although the experiment was technically successful—the ash having pozzolanic properties and effectively substituting for the cement—it is doubtful if the slight savings made in the cost of concrete would not, in general use, be more than offset by the extra cost of handling and of close supervision.

**Blitz Rubble Aggregate.** On the Picton Street site, Camberwell, this has been used, in co-operation with the general contractors, as a means of economy in mass concrete foundations where the stresses are of a very low order. Again the savings are small and are partly offset by the need for frequent testing of the material and close supervision.

#### Drainage and Site Works

**Hexagonal Grassed Paving.** This form of grassed paving was developed from a German technique, which was used as a means of camouflaging aircraft runways during the war. Pre-cast hexagonal concrete pots, jointed in cement mortar, are laid on a hardcore base, and the hollow centres filled with soil and grassed (Figs. 3 and 4). This paving has been used on sites in the Wandsworth and Roehampton areas

to avoid concrete or tarmac roads around tall blocks of flats solely for the purpose of access for the 100 ft. high turntable ladders of the London Fire Brigade. The diameter of the holes is determined by the maximum diameter of the jack-plates of the fire-engine turntables.

#### Structure

Cost analyses have been made from time to time to check the comparative advantages of different forms of structure. Calculated load-bearing brickwork still is cheaper than any form of reinforced concrete or steel structure for blocks of flats or maisonettes at least up to five storeys high, and this fact has inhibited the development of new techniques. Detailed analyses and comparisons of the structures of a number of different eleven-storey blocks are still being made, but there is evidence that the concrete load-bearing wall system appears to offer a basically economic solution.

#### External Walls and Windows

Investigations and small scale experiments were made on a number of jobs to find suitable alternative cladding materials to brickwork for (a) economy, (b) speed of erection, (c) architectural reasons, (d) avoid-

# KEY

A:  $\frac{3}{8}$  in. insulating plaster-board (aluminium foil on inner face)  
 B: 1 in. Fibreglass bitumen bonded or  $\frac{1}{2}$  in. Rocksil insulation  
 C:  $\frac{1}{2}$  in. asbestos insulating board  
 D:  $\frac{1}{4}$  in. wired Georgian rough cast glass  
 E: 1 in. framing  
 F:  $\frac{1}{4}$  in. weepholes at 12 in. centres

U-VALUE:

U = 0.20 approx.

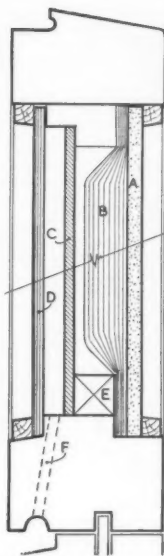


Fig. 9. Detail of typical under-window panel currently used in a number of L.C.C. housing schemes

ing delays of brick supplies. Research was carried out jointly with B.R.S. and small scale experiments were made in regard to condensation problems in metal or glass-faced panels.

In general terms, it can be said that external panel walls of brick-cavity-clinker block (facings at about 260s. per 1,000) still represent the lowest price target, even allowing for the cost of supporting beams, and the weight and thickness of brickwork. However, this target can now be achieved with at least two alternatives: (a) precast concrete storey-height exposed-aggregate facing slabs, backed with a cavity and a clinker block lining; (b) timber-framed panels, the non-window portions being filled with any of a variety of sheet materials, e.g. an inner lining of plywood, plus insulating quilt, asbestos board and an external facing of wired glass, aluminium or other material (Fig. 9). Much work remains to be done in developing trouble-free alternative claddings at an economic price, but these alternatives make for quicker completions and architectural variety.

It is difficult to find a cheaper facing material than wired cast glass, although this and any other impermeable facing gives rise to condensation problems. These are met either by ventilating the cavity at the bottom or by providing a good vapour-barrier as near as possible to the inner face, or by both means.

**Wooden Windows.** A standard range of wooden windows for use in blocks of flats and maisonettes was introduced in 1951, based on E.J.M.A. timber economy sections (Fig. 8). After the end of timber licensing the sections were increased (Fig. 7).

Overall sizes are based on brick opening sizes. The full range numbers 25 types

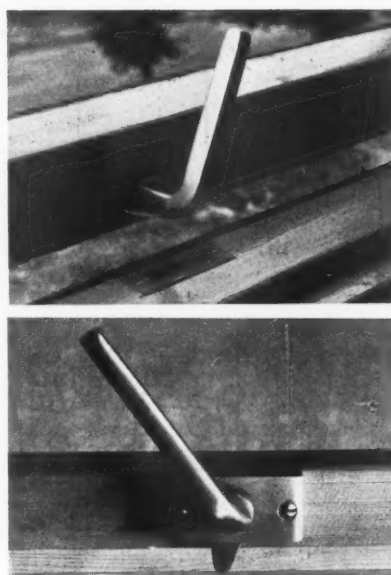


Fig. 10. Above: cockspur shown fitted to pivot hung sash; it is handable and can be used in five different situations. Below: new design of cockspur also in satin-finished anodised aluminium which has superseded the mortice type. It is stronger, is of die-cast aluminium with steel pin and the tongue of brass

(17 outward opening and 8 inward opening types for use on access galleries). The size of the largest pivot light is related to the maximum safe glazing size for 32 oz. glass, and the width of the side-hung casements is as wide as can reasonably be cleaned through the opening given by the easy-clean hinges.

A feature of the range is the horizontal pivot window which permits cleaning and reglazing from inside (Figs. 5 and 6). The scale and proportions of this range have imparted a very definite character to the blocks of flats in which they have been used. Tenants have generally liked the large glass areas in spite of the cleaning problems involved. The main criticism of the range from the tenants' point of view has been that although the pivot windows do provide night ventilation they do not control the inrush of cold air closely enough. The range of windows is therefore at present under revision and small fanlights for night ventilation (probably in metal) will be introduced.

**Metal Window Range.** A range of galvanised steel windows, similar to the wooden window range, was designed in 1952, but at the time it was not possible to obtain quotations for their supply at comparable prices. There have recently been indications that the price of such a range in metal, including the pivot lights, can now be obtained at much more competitive prices, and a limited number of jobs will now go to tender with metal windows.

**Window Furniture.** The range of matt-finished anodised aluminium window and

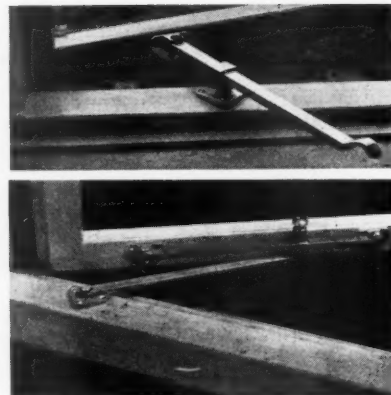


Fig. 11. Above: single arm peg stay casement fastener with spring-operated catch. Below: new design of double arm fastener; it does not project into the room, is more secure and positive in action and more robust. The knob is spring loaded and deliberately difficult for a small child to operate

door furniture was designed in co-operation with manufacturers to provide a high standard of finish at low cost. The furniture has this year been re-designed in the light of experience in use during the past few years. The single-arm captive peg-stay has now been superseded by the double-arm peg-stay (Fig. 11), and the mortice-type cockspur by a surface-fixing type of more robust design (Fig. 10).

## Partitions, Stairs, Cupboards, Doors, and Ironmongery

**Door Furniture.** A satin-finished anodised aluminium lever handle with latch and lock sets (Fig. 13) were designed in 1951 and have been in regular use since. The lock set has recently been adapted by means of a locking snib for use on bedroom and bathroom doors to avoid the use of separate bolts. A new kind of burglar-proof cylinder latch (Fig. 12) for entrance doors, with a lever handle inside to match the other internal door furniture, has also recently been developed together with a combined letter-box, door number plate and knocker (Fig. 13).

These articles are of low cost and of good quality and appearance compared with most designs currently on the market at similar prices. They have proved durable from the maintenance point of view.

The lever handles are of silver-anodised, satin-finished, die-cast aluminium and are designed for use with a roller latch set for most internal room doors and with a lock-set for external casement doors to private balconies. The lock set is also used for first bedroom, bathroom and w.c. doors with a small locking snib on the inside plate. The lock can be opened from the outside (in case a small child should accidentally lock itself in) by pushing a screw-driver or similar tool through a round hole in the outer plate.

The mortice type cylinder latch is used on entrance doors to flats and harmonises with the internal door furniture. The 5-lever

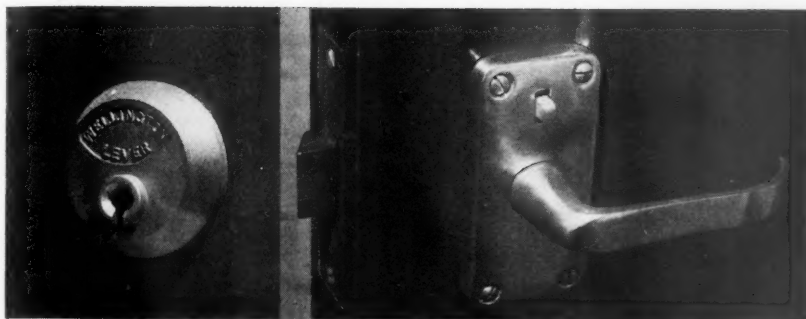


Fig. 12. New type of cylinder lock for entrance doors. This is burglar proof and has an internal lever handle matching the other door furniture

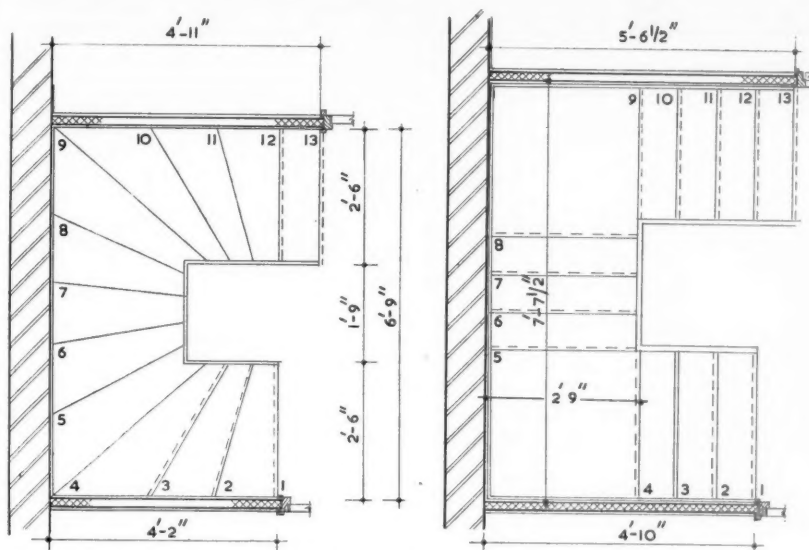


Fig. 14. Plan showing the space-saving achieved by the 'constant-going' stair

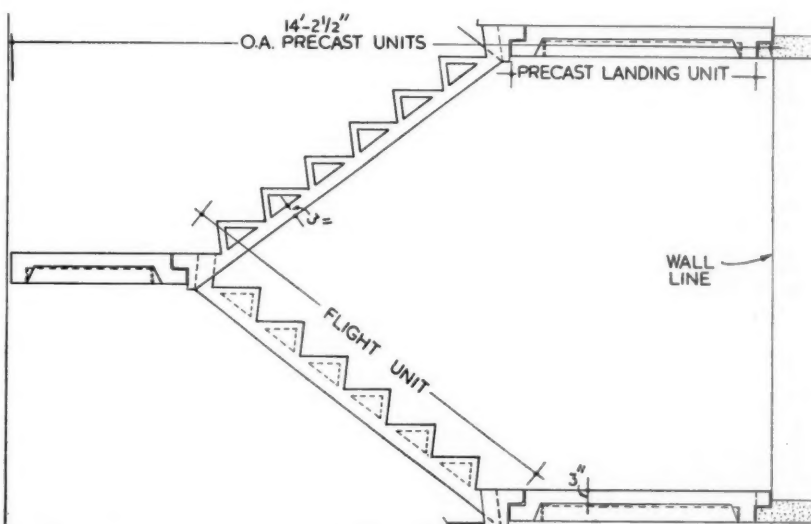


Fig. 16. Section through precast construction of public stairs. Landings and flights are lowered into position by a tower crane. So far used only on point blocks

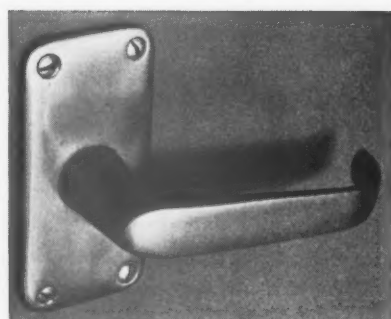


Fig. 13. Satin-finished anodised-aluminium lever handle without locking snib and, below, combined letter-box, knocker and number



Fig. 15. New design of self-closing refuse hopper in sheet steel. Asbestos cord around three sides of the frame reduces impact noise and acts as a dust seal

cylinder lock has a satin-chromed brass key escutcheon. A particular feature of the lock is the burglar-proof square-angled brass bolt which is designed to resist forcing by a knife blade or celluloid strip.

The postal plate is also in anodised aluminium with matt black anodised figures separately fixed, to avoid the delays due to ordering plates with etched numerals. The flap is weighted to act as a knocker and has a large projection to allow it to be used for pulling the door closed.

**Constant-going Stair.** An internal 'constant-going' stair, curved on plan with radial steps (Fig. 14), was designed to save floor space in houses and maisonettes. The design was intended to give a constant going of 8½ in. at a distance of 12 in. from the inner string, by which means it was hoped to avoid the dangers of ordinary winders. Some modification of the design, with a tolerance in the width of treads, has had to be permitted in practice, however, to make the construction of the stair in timber economical. The stair is being tried experi-

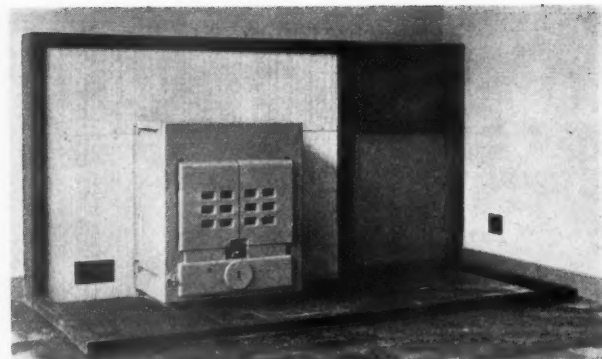
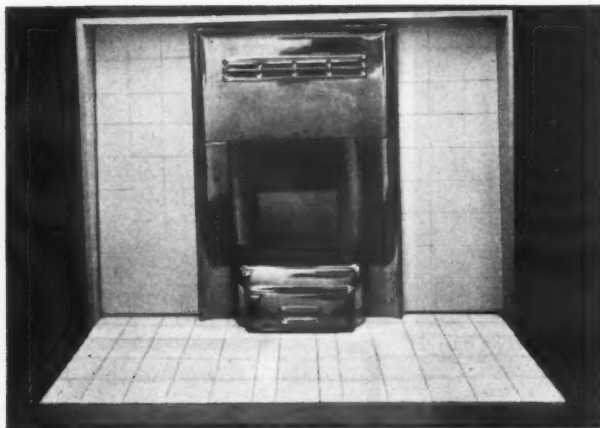


Fig. 17. Above. Openable stove designed for space heating and hot water in narrow-fronted maisonnettes. Fig. 18. Left. One of three types of convector fire, with back boilers, modifying existing commercial patterns

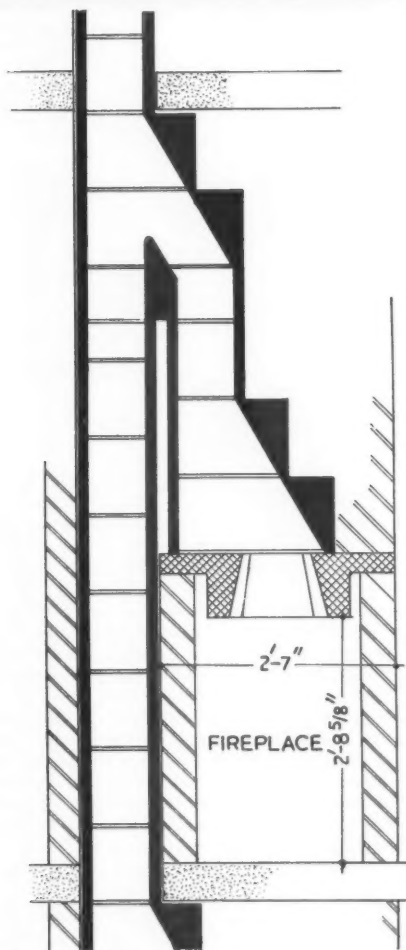


Fig. 19. Section showing typical construction of shunt or branched flues

mentally in a limited number of houses only.

**Public Stairs, Lifts, Refuse Chutes, Balconies, etc.**

**Precast Stair Flights.** Precasting of staircase

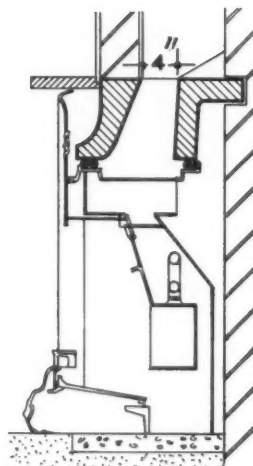


Fig. 20. Two sections of a throat unit in refractory concrete to obviate down-draught, to act as a lintel and to make a junction between the inset fire and the flue

flights and landings to public stairs (Fig. 16) has been tried experimentally in order to achieve a better standard of finish and to improve speed of erection. These aims have in fact been achieved, but in two schemes completed to date the precast flights have cost rather more than traditional *in situ* stairs, in spite of a large number of flights having been cast from the same moulds. Further experiments are being made with a view to reducing costs.

**Refuse Hoppers.** Research was initiated in 1953 to re-design the existing cast-iron refuse hopper to try to stop smells and dust, to obtain quieter operation and to improve appearance. The use of cast aluminium was investigated, but was unacceptable on grounds of cost owing to the very low price of the existing hopper with which it was desired to remain competitive. A compromise solution was achieved in sheet steel (Fig. 15). The new hopper is better

than the old in almost all respects—dust, smells, noise, action and appearance—and is probably as good as can be achieved at the price (under £4 each). An experiment is now being undertaken to encourage tenants to wrap their refuse. If this is successful it will pave the way to the design of a better and more hygienic type of hopper on Scandinavian lines.

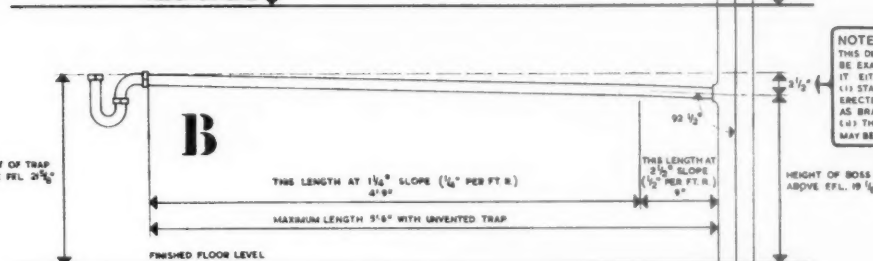
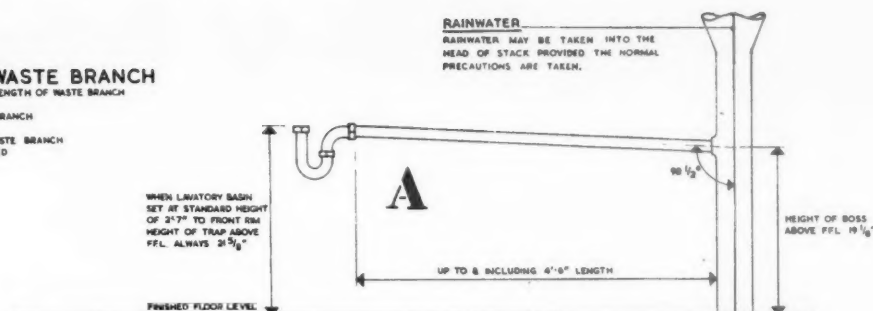
#### Services

**Branched Flues.** Reference was made at the Symposium on High Flats held earlier this year (see R.I.B.A. JOURNAL, March 1955) to the experiments being conducted by the L.C.C. in the design of shunt or branched flues. Two stacks of branched flues with open fires (Fig. 19) are being built in a 5-storey block and two stacks with openable closed stoves in a 10-storey block. If these experimental branched flues prove successful it is estimated that in future



# LAVATORY BASIN WASTE BRANCH

- CASE 1 - UP TO & INCLUDING 4' 6" LENGTH OF WASTE BRANCH  
SEE DIAGRAM 'A'  
CASE 2 - 5' 6" LENGTH OF WASTE BRANCH  
SEE DIAGRAM 'B'  
CASE 3 - OVER 5' 6" LENGTH OF WASTE BRANCH  
THE TRAP MUST BE VENTED



# SINK WASTE BRANCH

ALL SINKS FIXED AT 3' 0" HEIGHT ABOVE F.F.L.



# BATH WASTE BRANCH

MAGNA BATHS FIXED AT 2' 0 1/2" HEIGHT ABOVE STRUCTURAL F.L.  
'SITZ' BATH FIXED AT 1' 4 1/2" HEIGHT ABOVE F.F.L.



# SOIL BRANCH

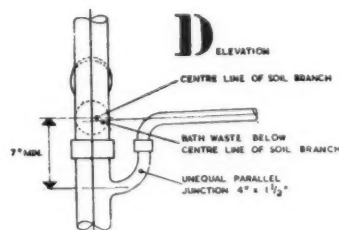


Fig. 21. Portion of information sheet for setting out single stack plumbing. The detail in the bottom left-hand corner obviates the meeting of w.c. outlet and bath waste at the same level

schemes savings of £10 to £30 a flat, according to height, will be achieved.

**Fires.** Convector type fires, an openable slow combustion stove and a throat unit were designed in co-operation with various manufacturers. The convector type fires (Fig. 18) were designed, as modifications of existing commercial patterns to provide

convected heat in the living room plus convected heat in dining kitchens where these are planned behind the fireplace. The addition of convected heat increases the efficiency of the appliance by approximately 30 per cent and appearance has also been improved. The slight increase in cost has been offset by the cutting out of builder's work in the surround. These fires have since

been modified to incorporate restrictor plates of butterfly action (a) to improve efficiency still further and (b) so that tenants on the lower storeys of multi-storey blocks can adjust the draught to avoid excessive fuel consumption. The openable stove (Fig. 17) was designed in 1953 to meet the space heating and water heating requirements of the narrow-fronted maisonettes



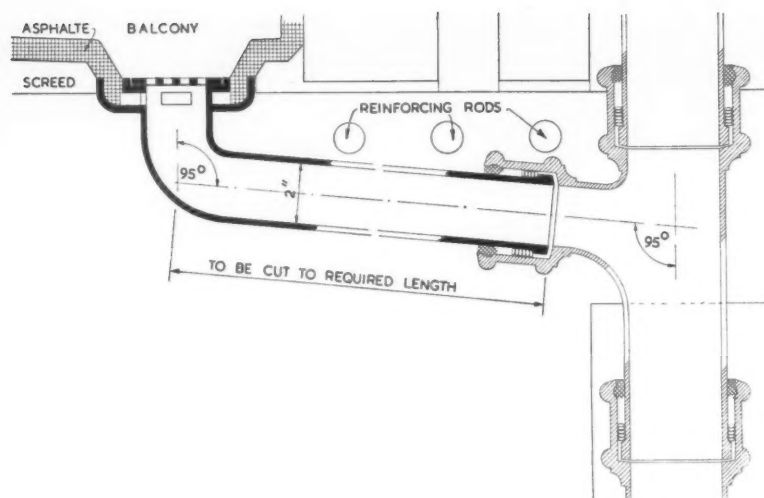


Fig. 22. Shallow rainwater outlet for balconies

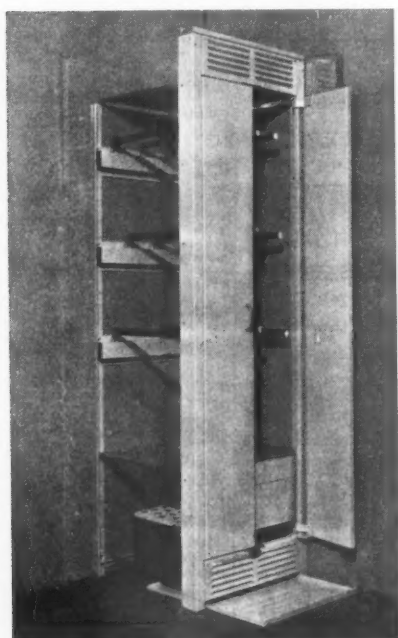


Fig. 23. Prototype of drying cabinet with gas burner box. A wire mesh guard prevents articles of clothing falling on the burner. The bottom tray, shown half withdrawn, enables dust and fluff to be removed. All metal parts are zinc protected and stove enamelled

in 11-storey blocks. The throat unit of refractory concrete (Fig. 20) was designed in collaboration with a firm of manufacturers to obviate down draught, particularly in top floor flats, and also to fulfil the functions of lintel and junction between the inset fire and the flue. It was laboratory and site tested and is now in general use. It also provides a saving of over £1 per flat on previous practice.

**Single stack plumbing.** Several experimental installations of single stack soil and waste

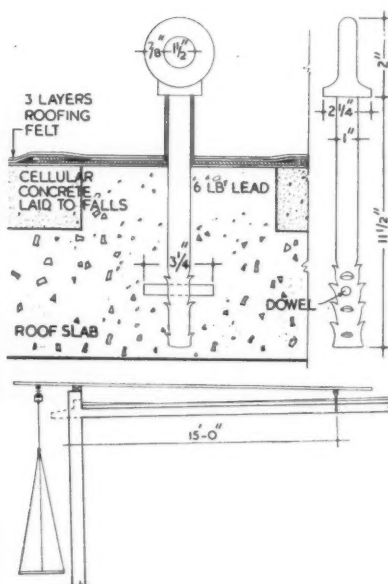


Fig. 24. Standard detail of permanent cradle bolt and method of hanging cradles

systems,<sup>1</sup> with complete elimination of vent pipes, have been tried over the past five years. On the basis of these experiments and of laboratory work by the B.R.S. it was decided to adopt the system in all suitable schemes designed after March 1954. Under the present Public Health By-laws, in London permission to instal the system is dependent on approval being granted by the local borough council. In the great majority of cases the boroughs have been extremely co-operative. The adoption of the system implies more attention to scientific design than is normally given to plumbing systems and more attention to accuracy of workmanship and setting out

<sup>1</sup> Note: for detailed description see R.I.B.A. JOURNAL May 1954, p. 268.

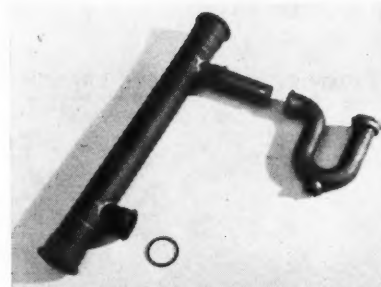


Fig. 25. The Bendz neoprene joint for copper pipe has been used in pipes up to 4 in. diameter

on the job. The tolerances allowable in the fall of the washbasin waste are particularly critical. Accordingly an information sheet for the use of job architects (Fig. 21) was prepared setting out the height of traps to washbasins and connections to soil stacks measured from floor level according to the distance of the trap from the stack. The point of entry into the soil stack of the w.c. outlet and the bath waste, relative to each other, is also critical, and a special detail for the entry of the bath waste in certain circumstances has been prepared.

Not all plans are suitable for using the single-stack system fully (particularly where the kitchen is remote from the bathroom), but most plans have now been adapted to incorporate it. The saving is from £10 to £12 a flat as compared with the 2-pipe system formerly used and more as compared with the one-pipe system. In blocks over six storeys high it can be applied only in a modified form with vented w.c.s, but further experiments on this are pending.

**Copper Pipe Joints.** A new technique of joining copper pipes—the Bendz system—was developed in collaboration with the manufacturer. This consists of a neoprene ring inserted into a groove at one end of a pipe into which the end of another is simply pushed by hand (Fig. 25). Installations with both soil and waste pipes have been made in several schemes, including 11-storey blocks of flats. The saving of labour and speed of erection is phenomenal. Technically the system has stood up to every test, including chemical examination and laboratory test of fittings removed from flats after a lengthy period of use. Financially, owing to the comparatively high cost of copper tube, compared with galvanised steel and cast iron, the system is not always competitive but tends to be cheaper if the plumbing is complicated. In one 11-storey block of maisonettes the saving has been found to be about £2 per flat with the additional advantage of a considerable saving in time of erection.

**Balcony Rainwater Outlet.** A new type of rainwater outlet from balcony floors (Fig. 22) was designed because existing commercial patterns are too deep for convenient housing between reinforcement in shallow floor thicknesses and also too short for convenient connection to down pipes inside internal ducts.

**Drying Cabinets.** In 1952 the Housing Committee of the Council decided to dis-

continue the provision of communal laundries in new housing schemes and to provide individual drying cabinets within each flat—usually in the kitchen—instead. After the preparation of new type plans work was begun on the design of a metal cabinet (Fig. 23) in conjunction with manufacturers. The Gas and Electricity Boards co-operated in the design of suitable heating elements and in research work to determine the shape of baffle plates, etc. The back and side walls of the cabinet are in brick or block, cement rendered, and the front, which is in metal, and the interior fittings, are separately fixed. The cost of this cabinet is more than £3 less than any commercially available equivalent and has a higher standard of finish and durability. The fact that part of the cabinet becomes builders' work results also in saving purchase tax of the order of £10 a cabinet, to which an all-metal unit would have been liable.

#### Finishes and Miscellaneous

**Floor Finishes.** A host of different flooring materials is constantly being examined and many have been tried out on jobs. Although several of these are satisfactory in use, it is difficult to find a competitor in price with thermoplastic tiles, which are consequently almost universally used, although they are unsatisfactory from the point of view of sound insulation.

**Paints.** Experiments on the use of various kinds of paint have been undertaken in co-operation with the Council's Scientific Adviser. The latter maintains a list of approved and graded paints, which is constantly under revision. The laboratories are always available to the Department for the testing of samples, whether from manufacturers or from sites. This service provides a valuable insurance against failures and represents a real economy to the Council in terms of maintenance.

**Roof Cradle Bolts.** Owing to wide differences in practice and to the dissatisfaction of maintenance engineers with the facilities provided, a standard roof cradle bolt was designed to take suspended scaffolds for the repainting and reglazing of flats over five storeys in height (Fig. 24).

**Site Signs and Notices.** The improvement and co-ordination of design of site signs and notices began to be undertaken in co-operation with the Director of Housing Management in 1954. Some are permanent notices in enamelled metal; others are sign-written. There is much to be done in this field from the point of view of design co-ordination. Figs. 1 and 26 illustrate typical signs or notices provided to date.



Fig. 26. A typical standard sign



## Memorial Dinner to Harvey Wiley Corbett

IT MUST BE A much-loved man whose friends, after his death, meet to dine and compare memories of him. So rare and charming a form of memorial expresses the degree of affection with which he was regarded. Such a dinner was recently held by the Architectural League of New York in memory of Harvey Wiley Corbett, American architect, Fellow of the R.I.B.A. and Honorary Master of Architecture, Liverpool University.

Corbett died in April 1954 at the age of 80 (an obituary notice appeared in the JOURNAL for July 1954, p. 391). The architect of many notable buildings in the U.S., he also designed Bush House in London. From the speeches, anecdotes and letters read at the dinner—a report of which has been sent to us by Mr. J. E. Aronin, M.R.A.I.C. [4]—there emerges the mental picture of a man unusually tall with 'an effective voice and slender fingers' who was a 'kind, imaginative and generous personality' and who possessed more than competent skill as an architect.

This skill was founded on a university degree in engineering and a Beaux Arts training in Paris. From the former he derived his deep comprehension of skyscraper building and from the latter his innate skill in planning. This unusual dual training, coupled with an alert and forward-looking mind, made him a force in that peculiarly American field of architecture, the giant building. Unlike many of his contemporaries and countrymen who were also trained in the Beaux Arts tradition, he cast overboard the design clichés of that school so that there emerged new forms of skyscraper such as the Rockefeller Center. When he designed the Roerich Museum, the form of structure which he adopted led him to extend the glass to the corners—a particularly shocking heresy at that time.

The warmth of his personality is revealed by the fact that he always addressed his assistants and the students of Columbia University School of Architecture by their Christian names. He liked to be surrounded by youth because, he said, youth always asked 'Why?' The presence at the dinner of many of his ex-assistants and students testified to the sincere friendship he aroused in them. His charm was extended to his clients. But, although remarkably skilful at 'getting a client to agree', he was anything but a clever salesman of work done by his assistants. The ideas behind the work were always his. Consequently, he was opposed to the typical American enormous office. 'I can feed ideas to 10 men', he said; 'If there are 11 men, they feed ideas to me.'

The speeches contained many quoted sayings of Corbett: 'Technique is always a means, but never the end. Technique is the presentation of an idea, but the idea

is the main thing. A trained man can see; an untrained man just looks. You can see a brain but not a mind.' His sense of humour was always in evidence. When his Roerich Museum was opened, the Foundation paid him the compliment of making him chairman at the ceremony. In his speech Corbett said, 'It is rather unusual for the architect of a building to be chairman of an occasion of this kind because, generally, when he has finished the work he is no longer a friend of his client.' He was an easy man to interview. He would receive and talk to anyone. One day a visitor—probably a salesman—called at his office and stayed two hours while he discussed with Corbett subject after subject. When he had gone Corbett asked, 'Who is that man?' Once while struggling to read the treasurer's report of the Architects' Emergency Committee during the financial depression he said, 'All the other organisations to which I belong are in the red; I just can't get used to these black figures.'

Among the many anecdotes related of Corbett was one concerning the time when he started to dig a swimming pool in his garden. He remarked to his wife, 'What we need is a bulldozer.' At that moment a giant bulldozer appeared rumbling down the street. Corbett stopped it, talked to the driver, telephoned the owner and in no time the excavation was done. A few days later while he was contemplating the next piece of work a great noise was heard down the street. Said his wife suspiciously, 'Now what did you wish for?'

During the whole of his 50 years of practice he retained his alert forward-looking mind. One of his favourite sayings was, 'Don't follow the example of the dodo bird, which always looked where it had been, not where it was going.' As one speaker remarked, 'Harvey died young.'

In the report of the dinner there is a story about Bush House which may be new to Londoners. Miss Malvina Hoffman, who carved the two big stone figures of 'England' and 'America' holding a torch over an altar and the inscription 'Dedicated to the friendship of the English-speaking peoples', said that in the last war a bomb fragment chipped off the hand and forearm of the American figure, leaving 'England' carrying the torch alone—in 1941. Sir Winston Churchill and 'the powers that be' decided to leave it unrestored.





The mural depicting the Fire of London, King Charles II and Sir Christopher Wren

## A Linoleum Showroom

Architects: Anderson, Forster and Wilcox [FF]

A SCHEME OF ALTERATION which has been carried out at the premises of the Linoleum Manufacturing Company, in No. 6, Old Bailey, London, demonstrates the possibilities of using linoleum not only for floors but also as a wall finish. The decorative possibilities of the material, which has the merits of being durable and easily cleaned, are well displayed in two large mural panels. These are in the showroom, but in addition linoleum has been used for covering the walls of offices, lavatories and the staircase.

In the showroom there were some existing features which had an influence on the design; for instance, there was a cast iron column with an ugly cap which it

was desired to hide; a false beam was therefore constructed to cover the capital, and the shaft was clothed in pale blue linoleum. Other columns were covered with the same kind of linoleum and over them the false beams were repeated. The means of escape to the roof had to be maintained and this was done by erecting a decorative staircase of the open type, with a balustrade and handrail on each side. A small window in one end of the showroom was enlarged to give a close view of St. Paul's Cathedral and Amen Square.

As there was a conglomeration of pipes running along the walls it was decided to hide them by erecting false walls of partition blocks, which were then plastered to



Treatment of a side wall showing columns clothed in pale blue linoleum, with responds in Iroko wood

receive the linoleum finish. This was carried out in 2 ft. by 2 ft. linoleum tiles in two alternating neutral colours.

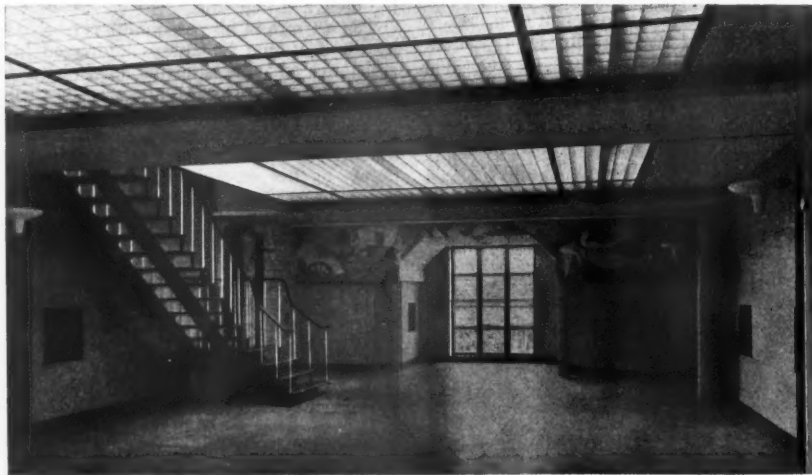
The linoleum murals are at each end of the showroom; they were carried out from designs by Miss Anna Zinkeisen. The mural surrounding the central doorway depicts the Fire of London, with King Charles II and Sir Christopher Wren in the foreground. The craftsmen who made these murals mixed the colours specially and then fitted the pieces together in the manner of a jig-saw puzzle. When completed each picture was baked to make it homogeneous and was then attached to the walls with a special adhesive.

The ceiling was formed with 2 ft.-square Perfonit acoustic tiles and the lighting panels were screened with plywood egg-crating.

In the lobby leading to the showroom there is a cabinet for the display of samples of linoleum.



Display cabinet in Iroko panelling



General view showing staircase and new window overlooking St. Paul's Cathedral





'Aelopiles' producing steam. Vitruvius edition of 1511

**Introduction.** When in the Middle Ages one spoke of 'the Philosopher', the allusion was to Aristotle. A similar position was accorded to Vitruvius during the Renaissance,\* since he appeared as the architect *par excellence*. A psychological element is here involved since the Vitruvian tradition of town planning was based on the circular outline and the diagram of regular winds. This familiar and pleasing set type, formed by a suggestive fully symmetrical image, retained its popularity over many generations. The psychological factor explains, however, only one facet of an evolution which was mainly conditioned by formally conscious and sociological factors.<sup>1</sup>

In order to appreciate the significance of the Vitruvian tradition in town planning the historical sequence of this evolution has to be briefly considered. It is true that towns have been either classed as planned or grown, but this distinction does not apply universally since the two approaches can be found in combination.<sup>2</sup> So a Vitruvian quarter may be juxtaposed to an unplanned part in an artistically and socially satisfying manner.

The main impact of the Vitruvian tradition in planning is, however, found in the layout of the whole township although this, as is well known, was not the earliest type of planning.

Early is found the grid-iron system, which recurs in a variety of civilisations and is the logical outcome of an arrangement of parallel streets. It has been described by Aristotle (*Politics*, II, 8) with regard to Hippodamos of Miletos, to whom also the division of society into three classes is ascribed. Because of its underlying monotony, it has apparently not been adopted for ideal towns.

Secondly appears the central plan, the theory of which has been handed down to the European tradition by Vitruvius from the period of Augustus. It may well reflect ancient pre-Roman layouts which were theoretically formalised.<sup>3</sup> Indeed, Vitruvius claims correctness rather than originality for his honest and straightforward directions, which combine statements of a variety of derivations, theoretical, practical and magical. The more complicated elliptic or oval designs of towns are derived from this central prototype, and the same can

# Historical Aspects of the Vitruvian Tradition in Town Planning

By H. Rosenau

be said of the configurations of circular designs, as represented by Patte's plans for Paris, published in 1765. Because of its formal compactness and harmonious outline, the central plan has been particularly favoured in theoretical thought by planners of ideal cities. But even when neglected the Vitruvian tradition acts as a challenge and thus played a vital part in opposing tendencies.

Although the classical scholar may regret that the contemporary drawings accompanying the Vitruvian text have not survived, more than a compensation may be found in the fact that this loss led to ever new reinterpretations through many generations and in various countries and styles. It is in this manner that the Vitruvian tradition became a living force.

The baroque vista leading the eye towards a *point de vue*, a significant and usually monumental building, is realised in many examples in Rome and all over Europe, and has perhaps made the most lasting contribution to the planning of towns in separate units. By contrast, the Vitruvian principle was fully developed in France, first perhaps in the plan for Paris of the Place de France by Châtillon of 1610, and this basic conception of radiating streets was later adapted to whole towns in Richelieu and Versailles. A further stage was reached when the walls enclosing cities had fallen, since their military function had ceased and their aesthetic and concentrating aspects were disregarded. Long avenues leading nowhere were constructed, stressing the growing preoccupation with the conception of the infinite but illustrating at the same time the lack of a fixed standard of social values as expressed in the rallying points of clearly set out religious or secular buildings.

The latest contemporary development, best theoretically represented in Le Corbusier's *La Ville Radieuse*, marks the transition from the drawing board to realisation. Its characteristics are the eschewing of symmetry, which is formally replaced by labile harmonies and functionally by an ever greater emphasis on social welfare. How far the ideal town will in fact be built and what problems this will create is for the future to consider, since the realisation as such engenders its own problems. But the fact that the general layout of Chandigarh is regular may well be a portent for future developments.

**Historical Sequence.** In this study, ideal planning is not regarded as a universal yardstick to which all architecture has to be subordinated. What is attempted is a comparison of towns with a common denominator, namely planning, and an

elucidation from the point of view of the social aims expressed in them. For this purpose, the Vitruvian tradition can act as a yardstick, not with regard to elevation and orders, which have mainly been studied hitherto, but in connection with the survival of the central plan.

Incidentally, it is important to remember that one element which gives such regularity even to the unplanned medieval town is found in the orientation of churches, which leads to a parallel direction of adjoining precincts. This arrangement, derived from antique temples, is prescribed by Vitruvius (Book IV, chapter 5, 1) and may well have reinforced continuity, although the orientation is towards the doors, the altars being found in the west. This theory only affects the internal design of the individual buildings, however, and not the general layout of the town.<sup>4</sup>

To illustrate the process of town planning, three publications will be especially considered, which have left an indelible mark on the history of architectural thought in Europe: Vitruvius's *De Architectura Libri Decem*,<sup>5</sup> presumably of the period of the Emperor Augustus; Alberti's *De Re Aedificatoria* of about 1450; and Patte's *Monumens à la Gloire de Louis XV*, first published in 1765 and then in 1767. The architects' individual significance in the erection of buildings is irrelevant for our purpose, since we are concerned here with their expression of theoretical attitudes, foreshadowing future developments.

Vitruvius's treatise is the earliest preserved, whilst its authentic illustrations are lost, and this acted as a challenge to sub-



Fig. 1. Diagram of Winds, Harleian MS. 2767. British Museum, 8th century, probably English

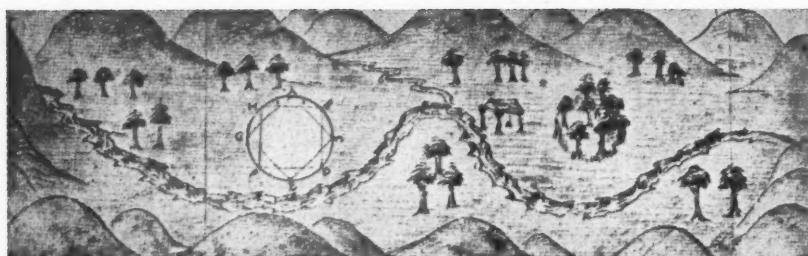


Fig. 2. Plan of 'Sforzinda', from Codex Magliabechianus, Florence, by Filarete

sequent generations of architects. The only exception is the tradition of the diagram of the winds, preserved in the 8th century Harleian MS 2767 in the British Museum, Fol. 16v (Fig. 1) for example.

Vitruvius divided his subject into sections dealing with sacred, public and private buildings, a sensible arrangement which has been largely followed by later writers. He stipulated that the market place should be in the centre of the town, but erected near the harbour if a sea-port. The radial arrangement of eight lines of houses, between the direction of eight winds, which had to be avoided for health reasons, may well be based on ancient magical traditions, the direction of the winds as well as their number being arbitrary from a realistic point of view. (Book I, chap. 6.) It is worth noting, for example, that the 'Etruscan Bronze Liver' of the Library of Piacenza, used in divination by the haruspices, and emphasising the relation between man and the universe, was divided into 16 parts, the pattern underlying Vitruvius's design of streets and houses.<sup>3a</sup> In its later evolution, the alignment of the diagram of the winds was maintained, whilst the enclosing wall dis-

appeared, thus leading to seemingly endless avenues. Vitruvius thus combines a concern for pure geometric layout with practical considerations, but ignores the philosophical tradition of the circular town, as seen in Plato's *Laws*, for example.

Vitruvius's sixth book deals with the arrangement of houses, according to whether the owners were rich or only moderately well situated and thus needing less accommodation. He noticed the requirements of the merchant and his need for space in order to display his goods. The layout of farms and their adjacent stables and sheds is discussed in the same book and it is interesting that provision for baths is especially made here.

Alberti's treatise, the original illustrations of which are lost like Vitruvius's, reflects a much more differentiated social situation. A few examples only can be given. Although retaining Vitruvius's main divisions in architecture, Alberti enumerates a variety of public buildings, premises for the principal citizens, the middle groups and those for the people (IV, 1). The apartments of husband and wife, although communicating, are separated according to the Greek tradition

mentioned by Vitruvius, and children's and servants' quarters are kept apart (V, 2). The houses and villas of the rich are discussed (V, 14), and soldiers barracks' noticed (V, 10). It is also characteristic that Alberti does not accept slavishly the idea of a circuit of walls (IV, 3) but allows variations with regard to the site, although he regards a round wall as superior. The approach of roads to great cities should be straight, but for smaller towns Alberti, after Vitruvius, considers it safer if they follow the outline of the wall. The streets inside the small town should also not be straight, but laid out in the manner of rivers, that is, following an undulating pattern (IV, 5), in fact reminiscent of unplanned medieval cities. So Alberti's attitude towards the Vitruvian tradition was selective.

As stated above, Alberti agreed with Vitruvius as to the preferability of a circular wall, and also stressed a hilly position for a healthy situation and inaccessibility (IV, 3), features which also influenced Filarete in his architectural treatise of c. 1457-64, with regard to his centrally planned city 'Sforzinda' (Fig. 2). His ground plan of the city within the landscape is perhaps the earliest example of its type.<sup>6</sup> This not only shows the Vitruvian tradition of eight sub-divided sectors, but references to Vitruvius also abound in the text. Whilst Alberti was ready to sacrifice regularity for a pleasing site (IV, 3), Filarete follows Vitruvius more closely in this respect. On the other hand, he goes further than Alberti in his concern for public buildings serving communal functions, enumerating, among others, prisons and schools and contrasting in a secular building Virtue and Vice<sup>7</sup>; the allegorical programme of the latter remaining medieval. It is worth noting that the

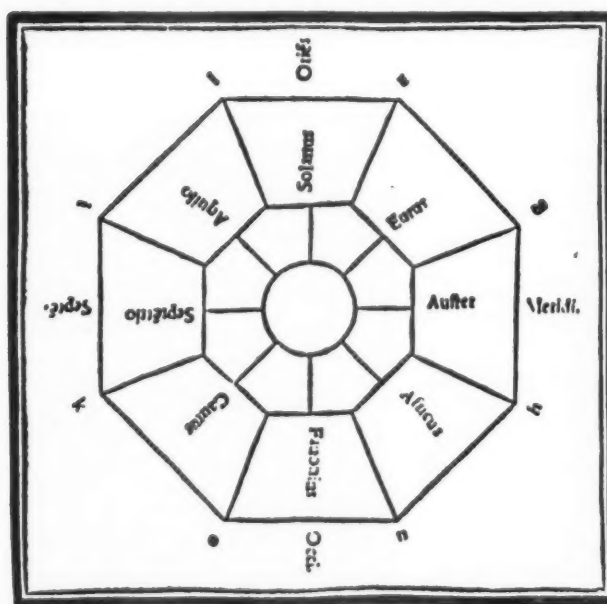


Fig. 3. Diagram of winds and city plan, from the Latin Vitruvius of 1511



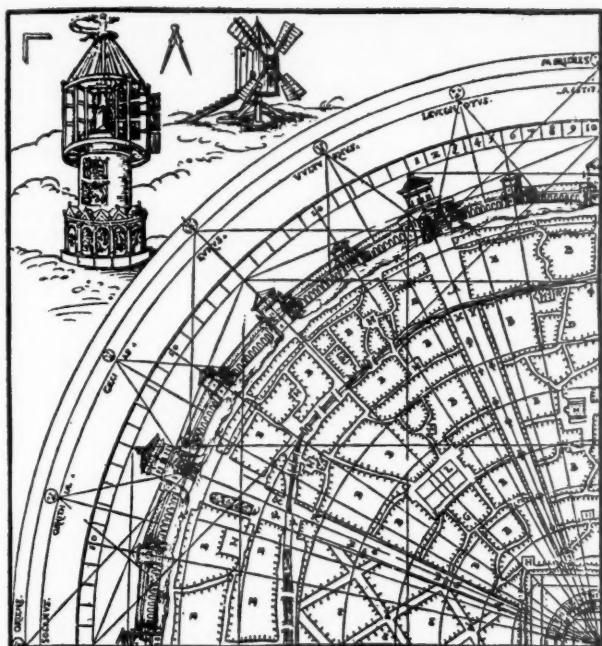
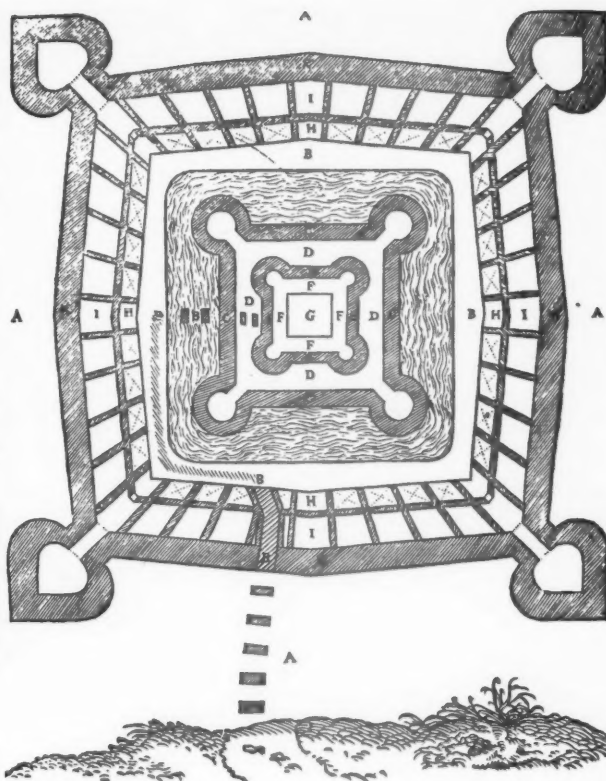


Fig. 4. Diagram of winds and city plan; from Vitruvius Teutsch, 1548



Right: Fig. 5. Ground plan of the tyrant's fortress; from the French translation of Alberti's *L'Architecture*, 1553

layout of the Vitruvian town, as interpreted by Fra Giocondo in the edition of 1511, shows four built-up 'islands'—*insulae*—while Filarete gives the arrangement of eight open squares as their equivalent (Fig. 3). In fact the emphasis on streets rather than squares characterises all early Vitruvian illustrated editions, while the later ones show a multiplicity of squares presumably derived from Filarete (Fig. 4).

In the ideal plans of Francesco di Giorgio Martini, and later of Cattaneo, Vasari the Younger, G. Maggi, Specklin and others, the symmetrical, frequently radial design is popular, an architectural conception which gained in importance with the Mannerist style. Even in outlines for fortifications, the military purpose became subsidiary to pure form.<sup>8</sup> An interesting exception illustrating the Alberti text is Martin's design for a 'tyrant's city', first published in 1553 (Fol. 76v.); the wood-cut is based on a medieval fortress prototype, serving the purpose of defending the city against internal as well as external enemies<sup>9</sup> (Fig. 5).

**Vitruvian Sectors.** In Baroque vistas, emphasising religious content, as in those conceived by Bernini and Fontana for the piazza and avenues leading to St. Peter's in Rome, one main focus of attention is found in isolation.<sup>10</sup> But from a secular point of view the layout of the Place de France for Paris, of the towns of Richelieu

and Versailles, leading towards the palace in a fan-like design, shows the shifting of artistic emphasis from Italy to France. It also reveals that the Vitruvian influence still prevailed, the sector replacing the full circle. The early 18th century planning of gardens and small subordinate buildings also emphasises distinctive view points and radial sections, but leads to an important change in that the approach becomes purely formalistic, stressing no building of particular significance but opening into vistas for their own sake, such as a clump of trees or 'folies'.<sup>11</sup> The silhouette of a wooden bridge in Kenwood, meant to be seen only at a distance, is a characteristic example of this taste, based on the picturesque. The influence of the Vitruvian sector as part of multifocal planning will be discussed below.

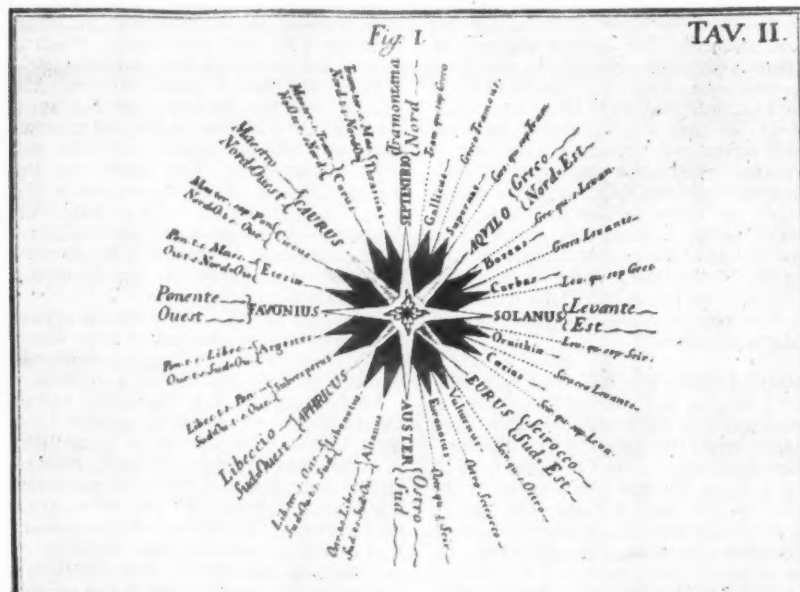
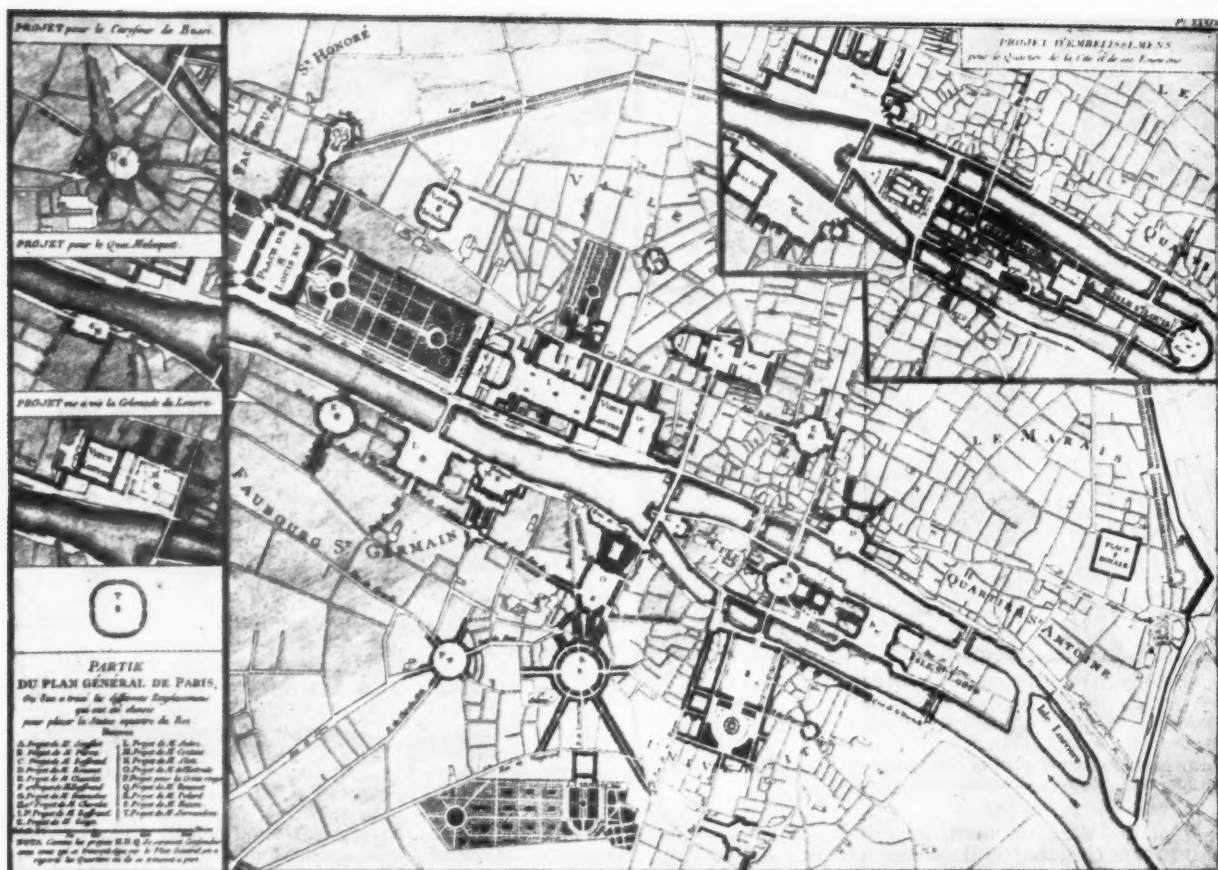
**Multifocal Plans.** The facts that European society became more varied in its requirements and that the population grew were bound to make their impact on architecture. A juxtaposition of plans for Paris found in Patte's book on the monuments to be erected to the glory of Louis XV, coming at a propitious moment, strongly influenced subsequent architects' work<sup>12</sup> (Fig. 6). The variety of plans, dealt with in the third part of this publication, pays special regard to the amelioration of life within the city, raising among other problems the question of the preservation of ancient churches which Patte did not propose to destroy

altogether. Notre Dame he wished to adapt as a parish church, but advocated a contemporary structure for the cathedral. He deprecated what he called 'cold symmetry' and stressed the importance of street openings with easy accessibility, which is related to his concern with 'commodité'.

From the social point of view, the designs for the markets are the most revealing (XLVI) with the detailed arrangements of halls for selling vegetables and other commodities. This caters for the material desires of all classes, while the plan of a Town Hall (LIV) is an indication of the rise of civic pride and responsibility. A broad outlook on education is expressed in Patte's description of free university courses (p. 67).

It may be added that the special appeal of some of the work in Bath of John Wood the Younger may be due to a synthesis founded on Italy and the work of Patte.<sup>13</sup>

We have seen how, in the second half of the 18th century, a drastic change took place leading from central, or formalistic, to multifocal planning which easily allowed for the enlargement of towns. It is interesting to speculate how this first set in, since no conscious or established theory appears in the writings or individual drawings of architects of this period. Perhaps Patte's volume points towards a solution of this question. His method was simple. Having devoted the first part of his book to an eulogising description of the arts and sciences under his sovereign, he devoted



the second part to the squares dedicated to him in Paris and provincial French cities, while in the third part he ingeniously projected a number of varying designs on a

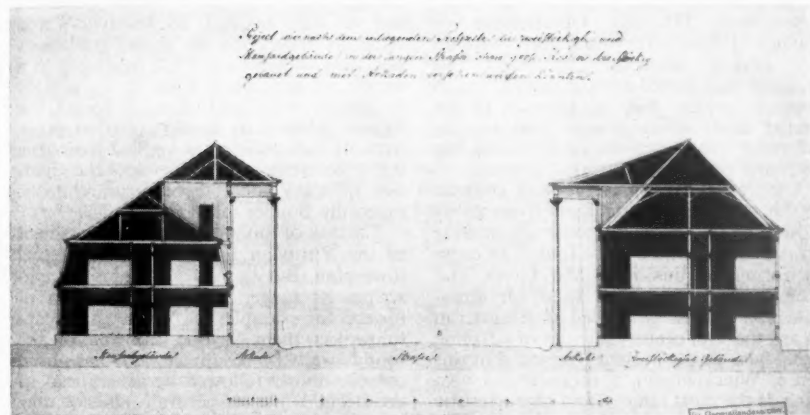
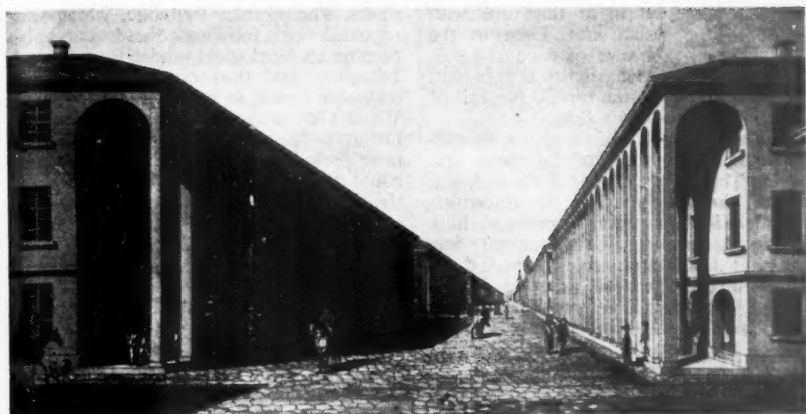
map of Paris. To him these plans were at first mutually exclusive, as parts of a competition for the embellishment of the capital city, but they could also be inter-

Above: Fig. 6. Plans for Paris, after Patte Left: Fig. 7. Diagram of winds; from the Italian translation of 1758, by B. Galiani

preted as the juxtaposition of a variety of units, stressing their diversity of shape and function. Indeed this secondary process already sets in with Patte himself since, when studying his collection of designs for squares, it seems obvious that he was interested at least as much in the adjacent buildings as he was in the statues of the King.

It follows that the 18th century French tradition of town planning did not basically reject Vitruvius's teaching, which had been made familiar through numerous editions and translations into French, for example, Jean Martin's of 1547 and Perrault's of 1684. Rather was it the integration of the well-known geometric units into an overall plan and their inter-communication, which expressed the requirements of a more varied social structure and, corresponding to it, a more differentiated taste, reflecting the outlook of a new class of patrons and their diverse needs.

The falling of the enclosing town walls in the late 18th century is also foreshadowed in the Vitruvian tradition since the diagram of the winds, as interpreted for example in the Naples edition of 1758, can be regarded



Figs. 8 and 9. The 'Lange Strasse' in Karlsruhe, as projected by Weinbrenner, adding giant arcades to older houses

as a *rond-point* with radiating avenues<sup>14</sup> (Fig. 7).

It thus becomes clear that the Italian preponderance in matters of art and architecture was challenged by France and it was from the French capital that the main impetus in later European town planning was derived. The basic pattern is an extension of those found in Paris, for example those relating to the Places Vendôme and Concorde on the one hand and the Place de la Madeleine on the other. The complexity of spatial relations and, combined with it, the directions towards several important centres, are here fully realised.<sup>15</sup> Boullée (1728-99) in his treatise covering many years presupposes a multifocal arrangement for his various public buildings, although this is implied rather than explicitly stated,<sup>16</sup> while the Place de l'Etoile is perhaps the most famous example of radiating streets.

In Gilly's plan for a city by the sea of about 1796, and his designs for the monument for King Frederick II of Prussia in Berlin of about 1797, a similar attitude is implied.<sup>17</sup> The influence of the Vitruvian pattern is also found in Karlsruhe in Germany, first with regard to the palace sector combined with the grounds of a circular plan, and later between 1780 and

1790 in relation to town extension, the 'general plan' being dated 1790. The designs for the Town Hall and its environment are by Pedetti, J. D. Antoine, M. d'Ixnard, Ritter, Lemoine and others. They show a great variety of symmetrical planning, combining the sector, the circus, the semicircle and square, and connecting *rond-points* with avenues.<sup>18</sup> Pedetti's plan of 1787 shows the circus and radiating avenues in the Vitruvian-Patte tradition and the same can be said of Salins de Monfort's designs for the layout of 1790. But the most remarkable, although not the earliest, example of this tradition in Karlsruhe is seen in the elevations for the 'Circle' surrounding the palace with its variety of heights for different types of houses, by Weinbrenner of 1797. Incidentally, the latter's 'Long Street' (*Lange Strasse*) (Figs. 8, 9) was projected as the main thoroughfare of one of the radiating roads. It shows a monumental frontage of three-storeyed houses, adapted from the rows of two-storeyed ones. This design, never executed, dates from between 1801-10 and shows the breadth of Weinbrenner's vision. Its gigantic arcade is in the typical French tradition of the Revolutionary period. The drawing of 1825 of the monument in the form of a pyramid in the

market square for the Margrave Carl Wilhelm, giving the section, further emphasises the French tradition as inaugurated by Boullée.

In 1808, in a competition for the site of the present Karolinenplatz and Königsplatz in Munich, the competing architects submitted fourteen designs, of which Stengel, Sckell and Riedl, Rudersheimer and Praendtl produced one, Thurn, Gaertner and Dietrich two and Schadt three. (Munich, Kreisarchiv, Akt GL 2781 Nr. 1137, especially fac. 43, p. 162, p. 211, p. 230ff.) The series of ten plans in the Historisches Stadt-Museum of Munich, which are unsigned and undated but refer to the same site, may well belong to this series. Their elaborate sectors and varying multifocal layouts have been overshadowed by the fame of Von Fischer and Klenze.<sup>19</sup> They denote a high architectural level, coupled with French influence, which obtained in Munich at this time. That these formal arrangements were made to serve the then prevalent type of stratified society is clear from Weinbrenner's models for dwellings in Karlsruhe, destined for different classes rigidly defined. On the other hand, the statement of Fr. Thurn, the Royal Inspector of Buildings, at the inauguration of the Munich Academy in 1815, urged the combination of artistic pursuits with social amelioration, thus giving an emphasis to Reformist ideals, influenced no doubt by the tradition inspired by Count Rumford.<sup>20</sup>

The French impact also spread to England but in a slighter degree; it can be seen in Gandy's drawings, in George Dance the Younger's lay-out for London Bridge and his designs for architectural development both north and south of the river Thames.<sup>21</sup> Even Bentham's Panopticon is indebted to the Vitruvian ground-plan of a town as popularised in the French tradition. But the greatest composition incorporating French design outside France is perhaps Valadier's Piazza del Popolo in Rome.

In Ledoux's first plan for Chaix the worker is for the first time considered as an important factor of society in architectural design. In earlier phases, the Fuggerei, intended for poor citizens in Augsburg with its grid layout for example, they are rather treated as adjuncts, and that is still true of Colbert's new industrial cities of the 17th century,<sup>22</sup> where cursory regard only is paid to the workers' needs. In Ledoux's Chaix,<sup>23</sup> the new emerging fact is the growing consideration given to the rising fourth estate; a special community centre is to be constructed, while each family is to be provided with an individual room. This arrangement, shocking and disturbing to contemporary standards, is in fact an early acknowledgement of the human needs of the workers (1775-79). The second plan for Chaix, Ledoux's 'ideal city', is elliptic. It can be explained by the Vitruvian town layout coupled with the ground-plan of the Colosseum or the Piazza of St. Peter's. The plan shows radiating avenues as well as a 'green belt' of trees, replacing the city walls, and thus ensuring the city boundaries. It is



typically ambivalent in this respect, representing a balance between the open and enclosed town. By contrast the sprawling city is foreshadowed by Goethe in the 'Paedagogical Province' of *Wilhelm Meister's Travels*, where the town is thinning out, the main buildings being in the centre, the suburbs expanding into the fields and eventually dispersed in garden dwellings (1821).

This attitude may be contrasted with the provision, suggested by John Wood the Younger in his *A series of Plans for Cottages, Habitations of the Labourer*, published about 1781. The agricultural labourer is to have improved accommodation not only to gratify his own needs but also to afford a more pleasing view for the landowner. In this sense, the erection of *cottages ornées* is related to the 'follies', to which kinship is shown with regard to their thatched roofs and their general emphasis on the rustic, although others are of a more classical design. It is worth noting that in Wood's treatise parents, boys and girls are provided with separate rooms; a new luxury, in advance of Ledoux. Furthermore, in order to make neighbourly help possible, Wood propagated the semi-detached cottage for workers on farms. So the emphasis in England is on the need of the agricultural worker, while in France the stress is laid on the industrial class.

When the multifocal plan was challenged during the 19th century, a form reminiscent of earlier phases sets in, as seen in the extended street without relevant focusing point; for example, the Rue de Rivoli of Napoleon I or the Boulevards of Napoleon III.

As stated above, the Vitruvian tradition could also serve in these cases, since the diagram of winds, omitting city walls, requires no boundaries. This process reflects the atomisation of social purpose, and the lack of unifying ideals, a fact which was less apparent under the first Napoleon since he continued to pay lip service to the ideals of the Revolutionary period, but led to disintegration under Napoleon III, as so vividly and ironically portrayed in Offenbach's operettas and as so biting described by Marx.<sup>24</sup>

**Stylistic Considerations.** Having dealt with the social content of the works discussed, a word should be added about their style. The late 18th and early 19th centuries are frequently described as periods of neo-classicism, but this term is misleading in so far as it only stresses one formal constituent element. It is only lately that it has been rediscovered as a significant architectural style but its interpretation is still open to improvement.

It is a well-known fact that classicism was a recurrent phase in the European history of art, since antique prototypes were even of influence in the Middle Ages and prevalent during and after the Renaissance. What was new in the late 18th and early 19th centuries was the social and communal interpretation of the classical forms. This tendency remained strong during the French Revolution, since no

notable change set in at this time with regard to the visual arts. Even in the Revolutionary paintings of Jacques-Louis David this painter's classicism is apparent, as seen distinctly in the topical portrait of *Marat, Murdered in his Bath*.<sup>25</sup>

Four main aspects of classicism characterise the development of European art: they may be called the formal, the archaeological, the utopian and the reformist. Although these aspects intermingle, it is nevertheless true to say that one only was dominant during any particular period.

Formal classicism, as a predominant concept, was found in the Renaissance when antique religious prototypes were adapted to a secular or Christian usage. The strict archaeological emphasis in art is mainly seen in the 18th century, when scholars like De Caylus studied the past in a detached spirit (*Recueil d'antiquités égyptiennes*, 1752-68). Quatremère de Quincy (1755-1849), whose early writings are unduly neglected, continued this tradition but added to it a marked social concern, which was in advance of his period and which relates him to the reformist classicism, dominant in the late 18th and early 19th centuries.

Utopian classicism is the very contrast to this attitude since the flight from reality is akin to the Romantic tendency, seeking an Arcadia nowhere to be found. In order to formulate this ideal the Greek and Roman prototypes were used for atmosphere, a process which led to historicism in art, the 19th century attempt of adapting past styles to the present. Regarded in this sense, Winckelmann, a misfit in his own time, is the most famous and characteristic forerunner of utopian classicism. The reformist attitude, on the other hand, which characterises so-called neo-classicism, adapts the classical forms to serve a new predominantly social consciousness, as seen clearly in the late 18th century. In exceptional cases, this leads to 'restitution'—the taking over of an ancient form for its original purpose without direct copying, such as the adaptation of pyramidal tombs by Boullée.

The designs of Boullée, Ledoux and their contemporaries have recently again attracted attention after years of oblivion. It is therefore opportune to reassess the meaning and style of these works. They have been classed as 'megalomaniac' by Lemonnier, 'autonomous' by Kaufmann, while the works of their contemporaries, painters and sculptors, have been regarded as 'utopian' by Zeitler.<sup>26</sup> In particular it seems important to assess the difference between 17th century classicism as expressed by Fr. Mansart or Poussin and the neo-classicism of the late 18th and early 19th centuries.<sup>27</sup> It is not a question of more or less realism or of a greater or lesser admixture of Graeco-Roman forms. Both are found equally in the 17th and 18th centuries.

The works here concerned are certainly not autonomous—art for art's sake, as suggested by Kaufmann—but functional, serving a moral or ethical ideal of equality of opportunity, of fortune, and of social

rights. The Roman Republic, which was regarded as fulfilling these concepts, became an ideological model for practical behaviour and thus classicism expressed realisable social, as well as formal, values. While 17th century art was serving absolutism or became remotely utopian, the later period emphasised social needs and could thus serve the Revolution even if the artists concerned were opponents of violent political trends. Large-scale architecture is based on this fact, since only monumental expression was considered adequate for the ideals involved.

If the question is finally asked what constitutes the greatness of Vitruvius,<sup>28</sup> Alberti and Patte, a tentative answer may be given. These architects primarily express the spirit and conditions of their own periods but add to them a distinctive element—the answers to social questions not yet fully realised. In Vitruvius's and Alberti's reflections on social gradations and their demand for a full treatment of a variety of architectural needs, as well as in Patte's multifocal plan, is found the formal solution to hardly apparent problems. If this criterion is applied their true importance emerges, and so does the greatness of many late 18th century architects, especially Boullée and Ledoux.

The task of this study was the assessment of the Vitruvian influence on the actual town-plan. But this by no means circumscribes its range. In the construction of towers, for example, the Vitruvian precept to project them beyond the line of the round wall (I, chap. V, 2) has been conscientiously followed by generations of architects, while his general influence may be gauged by comparing the triangulation of Milan Cathedral in the 'Vitruvian spirit' with the reconstruction of a Roman house by Scamozzi. Even the interest in primitive huts, widely allied in the 18th century with concern for the picturesque and the 'noble savage', is foreshadowed by Vitruvius (I, chap. 1, 2, 3) (Fig. 10).

**Conclusion.** To sum up: it has been seen how in creative periods ideal forms such as the circle were allied to a clear and distinct vision of social content. Thus the further development of town-planning was connected with the variety of more differentiated human needs, and their visual integration in a regular pattern, frequently adapted from antiquity. It was only during the mannerism of the 16th century and in recent years that a purely formal approach was prevalent. The latter is the counterpart of and challenge to the technical emphasis on materials, and the paramount importance attached to technology. It is typical of the *art nouveau* period and its exponents in this country and on the Continent. In the garden city ideal—unsuited for a small industrial country—we find a characteristically utopian approach, since it demands an expansion of dwellings spoiling the countryside and denuding the town centre, thus inhibiting its social life. It is the synthesis between a recognition of social needs and their integration in formal patterns which makes the great architect

or architectural thinker,<sup>30</sup> and in this process the broad Vitruvian tradition and its derivations may yet have a part to play.

# NOTES

\* I wish to thank Mr. Palmes and the staff of the R.I.B.A., Professor Heydenreich and the staff of the Zentral-Institut für Kunstgeschichte, especially Dr. Lehmann Brockhaus, Dr. Martin and Dr. Fischel from the Art Gallery, Karlsruhe, for their assistance in research; also Mr. A. C. Sewter and the History of Art Department of the University of Manchester, and Dr. M. Tyson, Librarian of the University of Manchester, for their help in acquiring photographs. An extract of this study was delivered as a lecture to the Library Group of the R.I.B.A. on 25 April 1955. I also wish to take this opportunity of expressing to the University of Manchester my gratitude for a travelling grant in 1954.

1. H. Weyl: *Symmetry*, Princeton 1952; L. L. Whyte: *Aspects of Form*, London 1951.

2. It is obviously impossible in a short study to give a full bibliography of so wide and intricate a subject, but the standard works of reference and a number of specialised articles will be mentioned in this and the following footnotes. To the former class belong A. E. Brinckmann in *Handbuch für Kunstwissenschaft*; P. Lavedan: *Histoire de l'urbanisme*, Paris 1937 ff.; L. Hauteceur: *Histoire de l'architecture classique en France*, Paris 1943 ff.; L. Mumford: *The Culture of Cities*, London 1938; P. Klopfer: *Von Palladio bis Schinkel*, Esslingen 1911, is unduly overlooked and still indispensable for the problems here discussed.

3. C. G. Jung and K. Kerényi: *Introduction to a Science of Mythology*, London 1951. The known Roman plans are based on the square, the Vitruvian influence becoming significant in and after the Renaissance. The references by Plato and Aristophanes to a central town plan seem to be indicative of aesthetic judgement, rather than of immediate influence on the actual building of cities.

4. H. Rosenau: *Design and Medieval Architecture*, London 1934, p. 1 ff.

5. Numerous editions and translations of the work of Vitruvius exist, in fact a history of taste may be compiled from the numerous editions and varied illustrations here found. On the relationship between illustrations cf. H. Röttinger: *Die Holzschnitte zur Architektur und zum Vitruvius Teutsch*, Strasbourg 1914. The first illustrated printed edition is by Joannes de Tridino in Venice in 1511, followed by those of 1513 and 1524. The next is the Como edition of Cesare Cesariano of 1521, printed by Gaetano da Ponte. This is followed by the Perugia edition of 1536. The first Spanish edition is by Sagredo in 1539. The Latin edition in Germany by Rivius is of 1543, the French by Martin of 1547, the first German by Rivius of 1548.

5a. Cf. C. Thulin, especially in: 'Die Götter des Martians Capella' in *Religionsgeschichtliche Versuche*, III, 1906, p. 1 ff.

6. W. von Oettingen: *Filarete's Tractat über die Baukunst*, Vienna 1890, passim. Also M. Lazzaroni and A. Munoz: *Filarete*, Rome 1908. Relevant information is also found in R. Wittkower: *Architectural Principles in the Age of Humanism*, first edition London 1949, passim, especially p. 9. L. Lang in *ARCHITECTURAL REVIEW*, August 1952. Also cf. E. Q. Puliga in *La Martiniella di Milano*, VIII, 1953, especially p. 460. I owe the last reference to Dr. Casieri.

7. Ledoux's Panareteon, dedicated to virtue and his Oikema, which is destined to the curing

of vice and to the education for marriage, are both reminiscent of medieval contrasts between good and evil, and thus reminiscent of Filarete's house of vice and virtue, which was however unknown to Ledoux—Cf. p. 480 of this study. It is characteristic of Filarete that he notes the ill-looking inhabitants of a village on the way to an ironworks—Book XVI.

8. A. Blunt: *Artistic Theory in Italy*, Oxford 1940, passim. Cf. G. K. Lukomsky: *I Maestri della Architettura*, Milan 1933. Palma Nova is the only executed city of this type in Italy.

9. S. Toy: *Castles*, London 1936, especially Fig. 136 showing the plan of Bodiam Castle, a typical example of late medieval fortification.

10. R. Wittkower in the *JOURNAL OF THE WAR-BURG AND COURTAULD INSTITUTES*, 1939–40, III, p. 88 ff. A. Munoz: *D. Fontana*, Rome 1944. Also A. Blunt in the *Pelican History of Art: French Art and Architecture in France*, London 1953 passim.

11. B. Jones: *Follies and Grottoes*, London 1953.

12. A monograph on Patte is a desideratum. Cf., however, the appreciation by W. Hegemann and E. Peets: *The American Vitruvius*, Architectural Books 1922. Le Père Laugier: *Essai sur l'Architecture*, Paris 1753, and second edition 1765, is similar in spirit but more traditional. His contribution to the theory of town planning has been recently over-rated in this country. He emphasises triumphal arches and straight streets, although he has more liking for the picturesque in architectural town planning than Patte, which may explain his present popularity.

13. On the architecture of Bath, cf. the detailed study by W. Ison: *The Georgian Buildings of Bath*, London 1948.

14. This process well illustrates the fact of new forms emerging from the adaptation of older ones.

15. G. Bardet: *Naissance et méconnaissance de l'urbanisme*, Paris 1951–52, gives the best description of the development of Paris in the 18th and 19th centuries. The social background and its influence on the arts is discussed in W. Folkierski: *Entre le classicisme et le romantisme*, Cracow 1925. The writings of Diderot, especially the *Salons* (edition by Assézat), and Grimm's *Correspondance Littéraire*, are revealing. The latter contains references to Patte's attempts to arrange Paris street lighting more efficiently, on the side rather than the middle of the streets (edition by Tournoux, vol. VIII, p. 58, referring to the year 1768).

16. H. Rosenau: *Boullée's Treatise on Architecture*, London 1953 passim.

17. A. Oncken: *Gilly*, Berlin 1935, appears the outstanding work on this subject and far superior to A. Rietdorf: *Gilly*, Berlin 1943, which is an adaptation of the former author's serious work to national-socialist ideology.

18. K. Ehrenberg: *Die Baugeschichte von Karlsruhe*, Karlsruhe 1908. A. Valdenaire: *F. Weinbrenner*, Karlsruhe 1919. Also numerous articles in local and regional historical periodicals dedicated to local aspects. Rich material is found especially in the General Landes-Archiv, the Art Gallery and the collection of the Technische Hochschule of the above city.

19. O. Hederer: *Die Ludwigsstrasse in München*, Munich 1942; J. Wiedenhofer: *Die bauliche Entwicklung Münchens*, Munich 1916. The thesis by Dr. Schindler on K. von Fischer throws light on the relationship between the two competitions.

20. E. Larsen: *An American in Europe*, London 1953.

21. Cf. H. Rosenau in the *JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS*, 1947, p. 502 ff., and in the *TOWN PLANNING REVIEW*, 1952, p. 313 ff. The plan of St. Petersburg of 1763 reflects French influence also. Cf. Patte, p. 63; also A. Setterwall: *E. Palmstedt*, Stockholm 1945, p. 310 ff. on the plans for the erection of a statue for King Gustave III, about 1790.

22. G. Laygues: *Colbert*, Paris 1920; *Civa Revue* 67, 1948. R. Th. Blomfield: *Sebastian le Prestre de Vauban*, London 1938.

23. C. N. Ledoux: *L'architecture considérée sous le Rapport de l'Art . . .*, Paris 1804 (Volume I). The works by Kaufmann (cf. Note 26 of the present study) do not deal with the sociological aspects of the works discussed.

24. S. Kracauer: *Offenbach*, London 1937; C. Marx: *The 18th Brumaire of Louis Bonaparte*, London 1926.

25. H. Rosenau: *The Painter J. L. David*, London 1948.

26. L'Architecte, V., 1910, p. 92 ff. E. Kaufmann: *Von Ledoux bis Le Corbusier*, Vienna 1933; *Die Stadt des Architekten Ledoux*, *Kunstwissenschaftliche Forschungen*, 1933; *Three Revolutionary Architects*, Philadelphia 1953. P. Zucker: *Die Theaterdekoration des Klassizismus*, Berlin 1925, throws light on theatrical decorations, whilst R. Zeitler: *Klassizismus und Utopia*, Upsala 1954, mainly concentrates on sculpture, especially Canova.

27. I am therefore unable to accept in full the conclusions of Antal in the *BURLINGTON MAGAZINE* LXVI, 1935, p. 159 ff.

28. I am here suggesting that Vitruvius was original in his concern for his fellow human beings, since these passages show none of the display of erudition and contradictions which characterise Vitruvius's statements of a less practical concern and a more theoretical nature.

29. A. Lovejoy and G. Boas: *Primitivism and Related Ideas in Antiquity*, Baltimore 1935; E. Panofsky: *Studies in Iconology*, New York 1939 passim.

30. G. Revesz: *Talent und Genie*, Bern 1952 passim. The author's attempt to differentiate qualitatively between genius and talent on psychological grounds leads only to a difference in degree, rather than in kind, the same criteria being applicable to both, and thus lacking precision. The reason for this may well be that Revesz's opinion is unsupported by facts which show an imperceptible gradation between artists, lesser and greater, rather than contrasts of an unbridgeable nature.



The building of the first huts, by Clouet, from Martin's French translation of Vitruvius, 1547





Coat of Arms of the Glenrothes Development Corporation

THE NEW TOWN of Glenrothes is situated in the centre of Fife and was considered by the National Coal Board as a suitable centre for housing miners working in collieries within a radius of ten miles. In 1948, after an extensive survey, a site of some 5,730 acres for the new town was approved by the Secretary of State for Scotland; an important point being that the area was free from the danger of mining subsidence.

But the object of the Glenrothes Development Corporation was not to build yet another coal town near a pit head but rather to provide a balanced town where people of many occupations can live together under the best conditions and be able to enjoy a full life in pleasant surroundings, and one of the aims of the Corporation was to ensure that the new town would have varied and economic interests. Good provision has been made for the development of new industries and two major zones have been set apart for that purpose.

It is not intended that the whole of the area designated for the new town shall be entirely built upon but only the central portion, leaving a wide green belt of agricultural land and woodland to enhance the appearance of the town and to protect its natural amenities. For the residential areas

## Some Recent Developments at the Glenrothes New Town

Chief Architect to the Development Corporation:  
Peter Tinto, A.M.T.P.I. [A]

a landscape treatment has been designed which, with the provision of open spaces, should produce a lively and interesting development, and at the same time reservations have been made for parks, public gardens, greenways and allotments.

The residential portion has been designed to provide a variety of types of dwellings from 2-storey semi-detached and terraces to flats in blocks and flats and maisonettes over shops, and while the greater part comprises 3, 4 and 5 apartments with kitchenette and bathroom, a number of 2-apartment houses for old people have been erected.

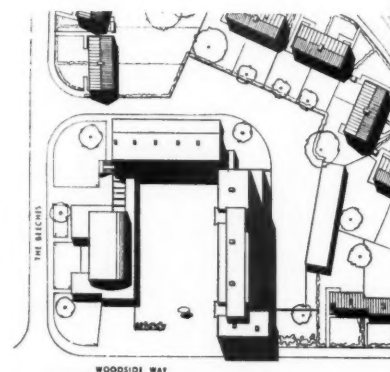
The Woodside precinct was the first to be put in hand and the accompanying illustrations refer to that area. The layout is noteworthy for a careful scheme of planning. It includes a second shopping centre and community hall.

The first group of single-storey houses for old people was built to commemorate the Coronation of Queen Elizabeth and bears an appropriate commemoration plaque. The walls are harled<sup>1</sup> and the roof is finished with a dark brown concrete tile. Cost in January 1954, £1,020 per house.

The 4-apartment chalet terraced houses are space-saving houses where the sloping rafters of the roof are used as ceiling joists, thus saving timber and ensuring maximum cubic air space. This low-pitch roof is of wood-wool construction, finished with bituminous felt on a lime-cement screed. The external walls are finished with a wet dash roughcast. Cost in April 1953, £1,380 per house.

The 4-apartment terraced houses have pitched roofs covered with concrete plain tiles, and the chimneys are built in Dun-

<sup>1</sup> Harling is a Scottish term. A rendering of cement and sand is applied to the brickwork and before it has hardened a slurry of cement and water is made. Small round pebbles are mixed in it and this mixture is then thrown on the soft rendering.



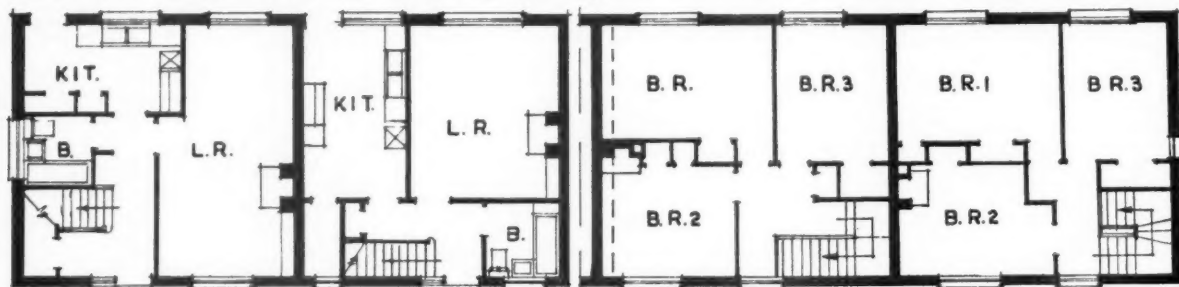
Block plan of the second shopping centre

brik facing bricks. Cost in September 1951, £1,771 per house.

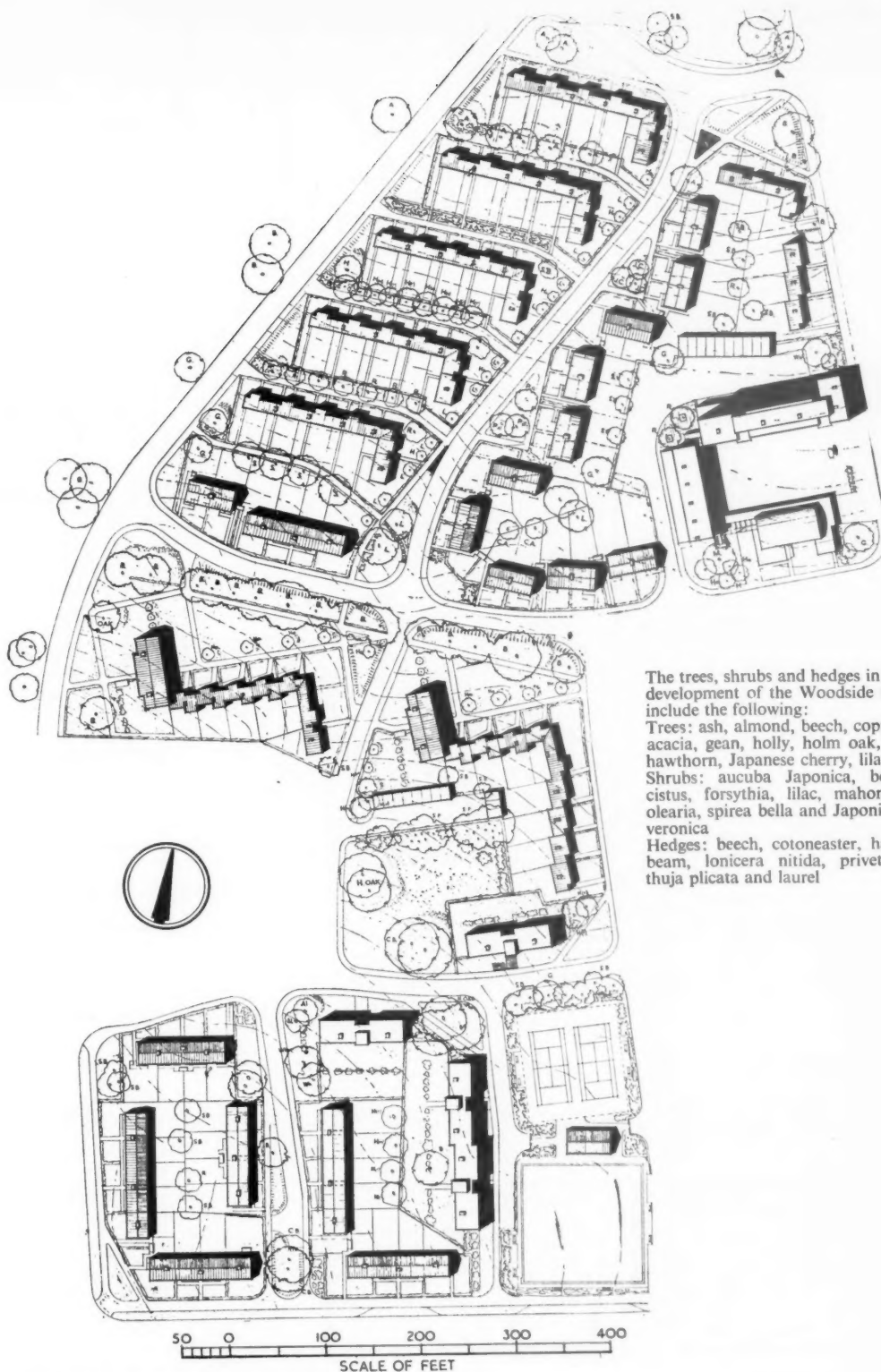
Tyrie Crescent, in the Woodside precinct, comprises ten 3-apartment terraced houses in a crescent-shaped block, the radius being 225 ft. Each house is built straight, but the segment effect is disguised by dividing up the frontage with pilasters of Dunbrik facing bricks. The brick gables are similarly faced. Westmorland slates cover the roofs. Cost in September 1951, £1,190 per house.

The 3-apartment 3-storey flat block at The Beeches, Woodside, has a low double-pitch roof with mineral finished bituminous felt on lime-cement screed on wood-wool slabs. The adjacent terrace houses have mono-pitch roofs of similar construction. The walls have a dry dash finish with Canterbury chips. Cost per house in flats, September 1951, £1,565.

The 3-apartment flats in Laurel Gardens, Woodside, contain some 2-apartment accommodation on the ground floor. The walls are finished with a dry dash containing Derbyshire spar. The staircase tower is in Dunbrik facing bricks. The concrete flat



Ground and first floor plans of block of four 4-apartment terraced houses



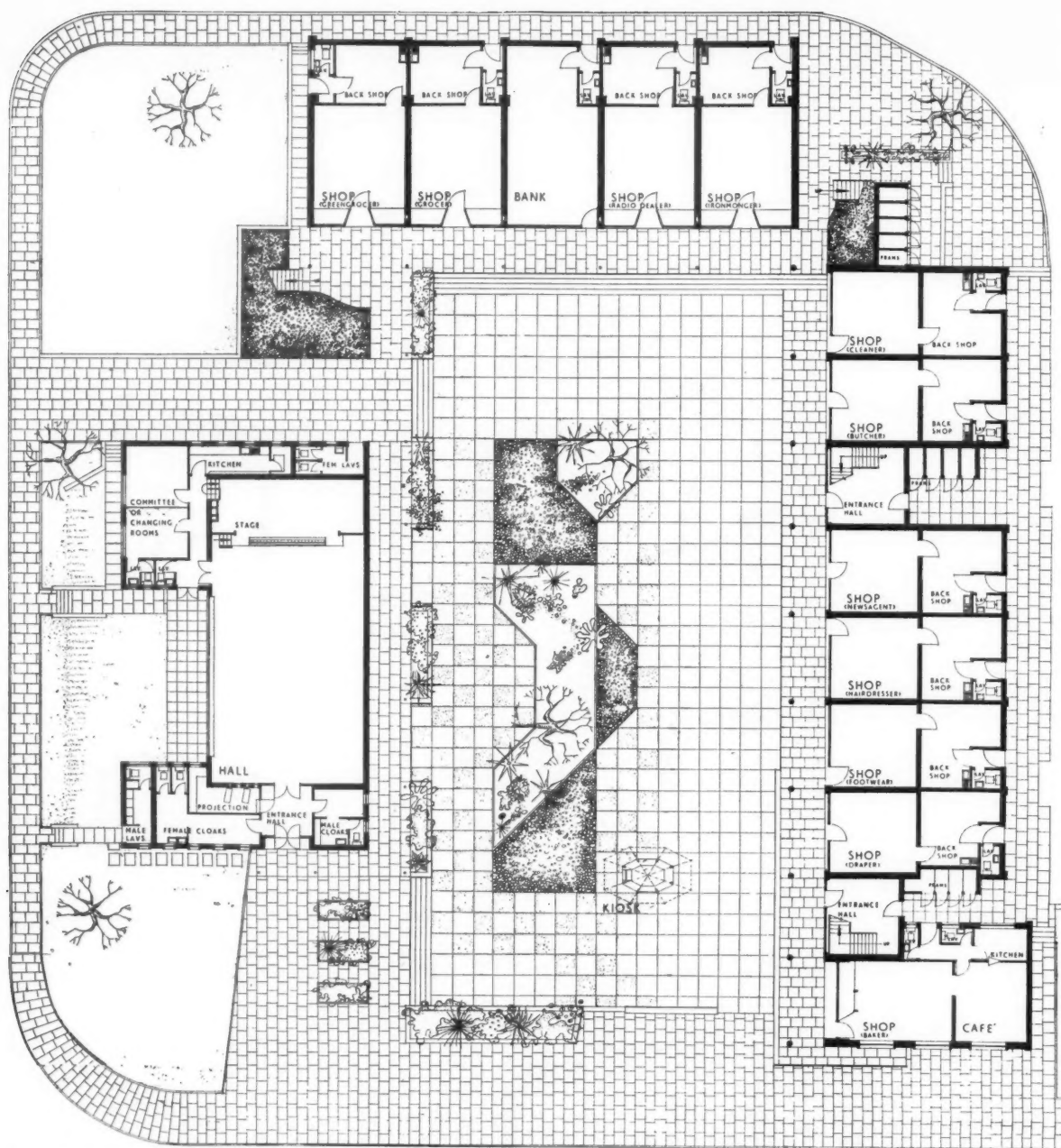
The trees, shrubs and hedges in the landscaped development of the Woodside residential area include the following:

Trees: ash, almond, beech, copper beech, false acacia, gean, holly, holm oak, red and white hawthorn, Japanese cherry, lilac and lime

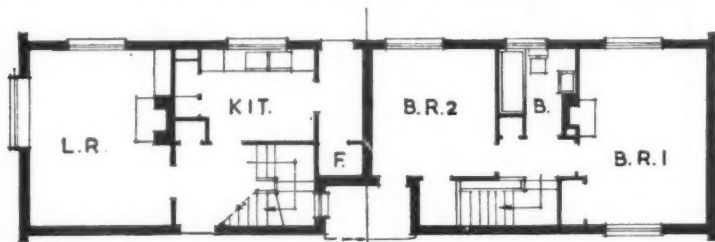
Shrubs: aucuba Japonica, berberis, buxus, cistus, forsythia, lilac, mahonia aquifolium, olearia, spirea bella and Japonica, syringa and veronica

Hedges: beech, cotoneaster, hawthorn, hornbeam, lonicera nitida, privet, sweet briar, thuja plicata and laurel

Layout plan of the landscaped development



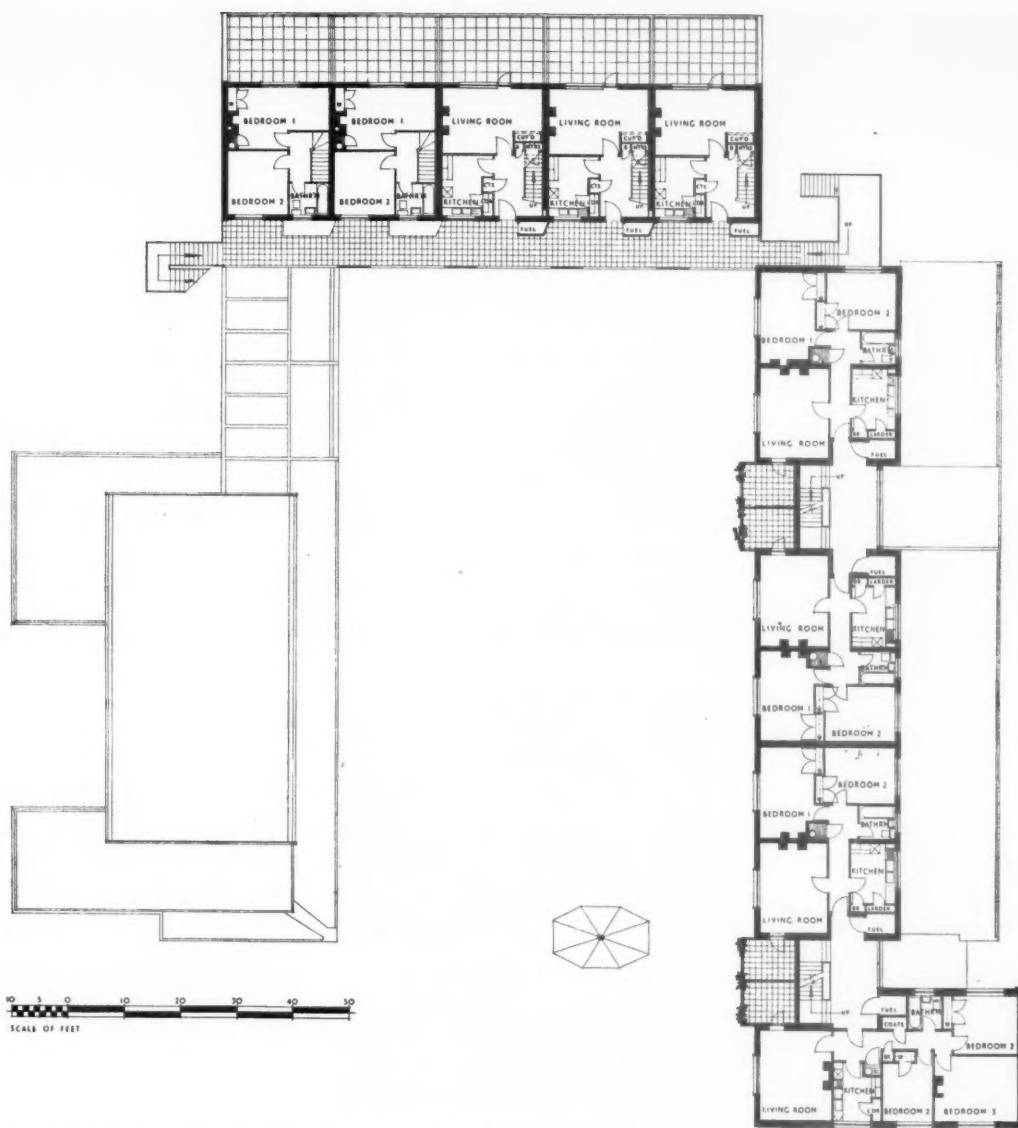
The ground floor plan of the second shopping centre, Woodside residential precinct



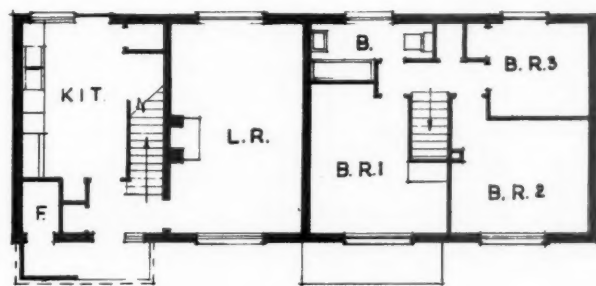
Ground and first floor plans of 3-apartment terraced houses

roofs are covered with a mineral finished bituminous felt on a foam slag concrete screeding. Costs in September 1951; 3-apartment house, £1,756; 2-apartment house, £1,230.

The second shopping centre is grouped round a pedestrian square in which are shrub and flower beds, and cobbled areas provide a change in texture from the squared paving of the general area. Two sides of the square contain 12 shop units;



The first floor plan of the second shopping centre in the Woodside residential precinct. The plan of the maisonette block at the head of the page shows both the first (living) and second (bedroom) floor plans



Ground and first floor plans of 4-apartment terraced houses

there are 5 maisonettes and 8 flats over the shops. The community hall forms the third side, the fourth being open.

The community hall is planned to seat about 240 persons. It has a 3-in. reinforced concrete barrel vault roof supported at each corner on a reinforced concrete column. The roof is covered with mineral finished roofing felt over  $\frac{1}{2}$  in. insulating board, and is treated internally with vermiculite plaster. The parts of the hall not covered with the barrel vault are roofed with 5-in. reinforced concrete roof slabs supported on 11-in. cavity brick walls, finished externally in facing brick, or dry cast Derbyshire spar, and plastered internally.

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Three-apartment flat block and three-apartment terraced houses, Tyrie Crescent, Woodside



Three-apartment flats and terraced houses, The Beeches, Woodside



Interior of the community hall at the shopping centre, Woodside residential precinct. The plan is on page 490. The shell roof is plastered inside with vermiculite plaster



Three-apartment terrace type, Hollytree Road



Three-apartment terraced houses, Hollytree Road





Model of the second shopping centre in the Woodside precinct. The community hall is shown in the left foreground. A kiosk stands in the middle of the open side of the centre. The flats are on the right-hand side of the square and the maisonette block at the closed end. The plans are shown on pages 490 and 491



Part of the right-hand side and closed end of the second shopping centre. There are 12 shop units with 5 maisonettes and 8 flats over. Two entrance halls give access to pairs of flats on each storey. The hanging signs under the colonnade opposite each shop should be noted

# Review of Construction and Materials

*This section gives technical and general information. The following bodies deal with specialised branches of research and will willingly answer inquiries.*

*The Director, The Building Research Station, Garston, near Watford, Herts.*

*Telephone: Garston 2246.*

*The Officer-in-charge, The Building Research Station Scottish Laboratory, Thorntonhall, near Glasgow.*

*Telephone: Busby 1171.*

*The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks.*

*Telephone: Princes Risborough 101.*

*The Director, The British Standards Institution, 2 Park Street, London, W.1.*

*Telephone: Mayfair 9000.*

*The Director, The Building Centre, 26 Store Street, Tottenham Court Road, London, W.C.1.*

*Telephone: Museum 5400 (10 lines).*

*The Director, The Scottish Building Centre, 425-7 Sauchiehall Street, Glasgow, C.2.*

*Telephone: Douglas 0372.*

**Frost Closure of Vent Pipes.** A publication issued by the National Bureau of Standards, United States Department of Commerce, deals with a problem that is unlikely to happen here but is of interest in view of the suggested simplification of our plumbing systems. The publication is called *Frost Closure of Roof Vents in Plumbing Systems* and describes the effects of the extreme cold to which parts of the U.S. and Canada are subject, which can result in complete closure of a vent pipe by frost.

The publication states that when waste water flows down a stack it carries air with it because of the friction exerted by the falling water on the core of air in the middle of the pipe, and the air thus removed is normally replaced through the top of the vent pipe. If this flow of air is prevented or restricted because the top of the vent is wholly or partly blocked by frost, the pneumatic pressure in the system may fall—when sanitary fittings are discharging into the stack—until air is sucked into the system through the trap seals of the fittings, and this may lead to sufficient loss of water in the trap seals to allow slight excesses of pneumatic pressure that occur when fittings are discharging to force sewer air through the reduced seals into the rooms of the building. (This apparently applies when there is no interceptor on the house drain.)

In cold weather the air in the stack is relatively warm and therefore rises if there is little flow of waste water, and when this warm moist air comes in contact with the cold inner surface of the vent pipe above the roof of the building some of its moisture condenses on the wall of the pipe, where it may freeze if the outdoor air temperature is low enough. This convection effect can also take place when there is an interceptor, as air can enter through the fresh air inlet, but as this air is at outdoor temperature it cannot rise in the stack until it has warmed sufficiently. When hot water is discharged from a fitting the moisture content of the air is high and tends to diffuse through the stack and venting system and thus may come in contact with the cold surface of the vent pipe, and partial or complete closure of the vent pipe may occur.

Closure may occur in two ways, or by a combination of both; either by a layer of ice or frost building up annularly on the interior wall of the top part of the vent, or by the building up of a frost cap from the rim of the vent, often taking the form of a cone some 4 or 5 in. high.

Methods of prevention of frost closure, mentioned by the U.S. publication, are (1) limit the height of the exposed length of vent above the roof to the extreme permitted minimum, (2) enlarge the vent pipe just before it passes through the roof, (3) instead of the usual metallic vent pipe, use a material having a high resistance to the transfer of heat, and (4) put thermal insulation round the exposed length of vent pipe.

In Canada, it appears, it is quite customary to limit the length of vent projecting above a sloping roof to one or two inches on the high side. At Saskatoon, Canada, a typical roof terminal is a special pipe with the upper rim formed at an angle approximately fitting the slope of the roof, with which it lies practically flush.

**Entrapped Moisture in Roof Insulators.** The Neuchatel Asphalte Company Ltd., of 58 Victoria Street, London S.W.1. have issued a booklet which contains much useful information about asphalt; its title is *The application of mastic asphalte in relation to certain trends in modern building construction*, written by the company's technical adviser, Mr. E. Vannan. In dealing with roofing, Mr. Vannan mentions the attention now being paid to heat transfer through roofing structures and the use of insulating materials; either organic, such as cork and fibre board, or inorganic, in which group are ranged the lightweight concretes of various kinds.

Dampness in the base on which asphalt is to be laid arises from bad weather conditions or other causes and is not always apparent at the time asphalt work begins, and it may not only interfere with the laying process but may cause subsequent trouble, since the effectiveness of the asphalt covering in providing a completely waterproof seal can lead to excess entrapped moisture being driven to points within the building.

Small proportions of water in the sub-roof, Mr. Vannan writes, are normally dissipated throughout the structure as drying out proceeds, accelerated when internal heating is used. These small proportions are absorbed more or less permanently in the sub-roof without ill-effect, or they may be reduced to insignificant quantities by evaporation from the ceiling and at peripheral cavities or contiguous structures. But excess water can show itself by drainage to the ceiling, bringing with it soluble salts from the leaching of the concrete sub-structure; it may be stained brown either by contact with metal reinforcement or by leaching of the saturant in the isolating membrane below the asphalt, or by both.

Mr. Vannan mentions that cases have been known where these effects have been ascribed to leakage in the asphalt covering whereas, paradoxically as it may seem, they actually arise from the seal produced by a perfect waterproof covering over conditions induced solely by permitting the presence of undesirable amounts of moisture in the structure before the asphalter has even begun his operations.

In the case of organic insulators (fibre board and the like) excessive amounts of water are not so likely to be present, but excessive moisture derived from water in the sub-structure may by capillarity be drawn to the surface when the asphalt is warm and can saturate the organic insulators, which are usually very absorbent, thus destroying their thermal efficiency, at least for a time. In extreme cases certain organic insulators are so absorbent that they can lose shape and thickness, and instances have been reported in which they have decomposed or even putrefied.

Copies of the booklet may be obtained on application to the company.

**High-strength Bolts.** An interesting method of connecting members in a steel structure is now coming into favour in America. It replaces rivets by high-strength steel bolts which are tightened by a pneumatic or electric impact wrench, requiring only two men—or even one—for its operation instead of the usual four-man riveting crew. A hardened washer is placed under the bolthead, to prevent the head from cutting into the softer structural steel; the bolt is then inserted in its place, another hardened washer is slipped over the bolt threads and the nut is screwed on and made hand-tight. One man then holds the bolthead in a wrench while the second man tightens the nut with the impact wrench. As the bolt is so strong it can be tightened to such a degree that it is most unlikely to work loose; in fact in America so far no case of loosening has been reported—an important point in dynamically-loaded structures.

Some of the advantages claimed for this impact wrench technique are: less labour, less noise, less time, less equipment and less danger of fire as heating of rivets is eliminated. It is understood that some use of the technique has been made in this country.

**House Warming by Heated Floors.** At the National Smoke Abatement Society's annual conference last month Mr. J. W. Moule, who is the deputy chief commercial officer for the South of Scotland Electricity Board, gave some interesting information on electrical floor heating. The building of nuclear power stations, Mr. Moule said, is an important step towards solving the nation's fuel problem. The power stations must run night and day if they are to function efficiently and therefore 'off peak' use of electricity will become of increasing importance and will be desirable in the national interest. Points from Mr. Moule's address are here summarised.

Electrical floor heating has aroused considerable interest in the last year or two. The system can be installed in two ways, while the building is being constructed; either by embedding small semicircular metal ducts in the concrete floors, the ducts ending in troughs with removable covers, or by cables embedded in the floor. In the first system the cables are drawn in afterwards through the ducts. As electrical floor heating avoids the need for pipes, boiler, chimney, etc., it is less costly to install than a hot water system.

An important feature of electrical floor heating, when installed in concrete floors, is that the use of electricity can be confined to 'off peak' periods, which usually means the charge of a special low price per unit, in some cases as low as 0.7 pence. Arrangements can be made for the supply to be available during the night time and for a few hours in the middle of the day. During these periods the concrete floors would be heated to the required value, as determined by the setting of a thermostat. The amount of heat stored in the floor would be enough to maintain the required standard of warmth throughout the period when the supply was not available, and tests have shown that no appreciable drop in the internal temperature of a floor-heated building takes place during the five hours following the switching off of the current.

Another point in favour of this type of heating is that results show that no harm is caused to floor coverings of carpet, rubber, hardwood, linoleum, cork and thermoplastic tiles. The absence of products of combustion, and of unnecessary air movement within the building, results in longer life of interior decorations, and permits a floor space free from encroachments and obstructions such as fireplaces and radiators.

An 8-storey block of all-electric flats at Kirkcaldy has electrical floor warming in the hall and living room of each flat. Provision is also made for electric fires and storage water heater, the water heater and the floor heating being connected to the 'off-peak' supply.

The cost of the floor heating and supplementary heating by electric radiators is estimated to be £19 per annum for the two-apartment flats and £24 for the three-apartment ones; the costs of hot-water, cooking, lighting, etc., are expected to be about £13 and £22 respectively. These

costs are considered reasonable as there will not be any expenditure on solid fuel or gas.

The re-wirable type of electrical floor heating, such as that in the Kirkcaldy flats, costs about £25 per kW, including associated electrical work. The loading of the floor warming installation worked out at an average of just over 3 kW per flat.

**T.D.A. Research Centre.** The Timber Development Association announce that they will shortly transfer their scientific and technical activities from London to premises at Tyler's Green, near High Wycombe. Investigations at the new research centre will be concerned less with wood as a material than with its uses in selected fields of industry, with special regard to design, production and processing. The research programme will supplement the fundamental studies that are being carried out at the Forest Products Research Laboratory, whose basic knowledge will be used to the full in applied research and pilot developments aimed at assisting designers, builders, industry and wood consumers generally, and by this means it is hoped that work at the centre will go a long way towards bridging the gap between industrial practice and experimental achievement.

Research into glued lamination will occupy a high place in the research centre's programme, so that eventually the designer will have at his disposal a full range of 'gluelam' components in standard lengths, sizes and strength which can be incorporated in structures with the same ease and guarantee of service as fabricated steel sections; a development that is already a reality in the United States and Canada.

Among the testing facilities at the centre will be a mechanical test bed which will be able to impose rigorous loading stresses to timber girders and trusses of up to 100 ft. in length.

The Association's technical advisory service will continue to be conducted from the London Headquarters, 21 College Hill, E.C.4.

**Decraspray.** This is a waterproofing material applicable to roofs and walls of industrial buildings. It is a bitumen emulsion covered with decorative materials such as granite, stone chippings and spar, in a range of colours, and it is applied cold by means of a spraygun.

The advantages claimed for Decraspray are that it is waterproof and resistant to the corrosive action of acid and alkaline fumes; that it can be applied to any type and shape of roof, and to walls of brick, breeze, concrete and all forms of panelling; that it is non-inflammable and even a temperature of 900° F will not make it run or flow; that as it gives a complete seal, heating losses are reduced and in hot weather the building is kept cooler, owing to solar reflection; and that the colour finishes are non-fading. A maintenance guarantee up to 10 years is given.

The manufacturers are Messrs. Berry Wiggins and Company Ltd., Field House,

Breams Buildings, Fetter Lane, London, E.C.4.

**Brunophen Wood Preservatives.** The Standardised Disinfectants Company Ltd. are now producing two organic solvent-type wood preservatives in addition to their tar-oil type preservative Brunolinum; they are called Brunophen No. 1 and No. 2, and in both the active ingredient is pentachlorophenol, which is toxic to dry rot and other wood-rotting fungi as well as to wood-destroying insects and is considered to be better than sodium arsenite as a poison and repellent against termites.

Brunophen No. 1 is a colourless general duty preservative; it is not recommended for timber which is to be painted, polished, varnished, lacquered or glued. Brunophen No. 2 is quick-drying and is suitable for use indoors where a decorative finish will afterwards be applied. For the treatment of timber affected by dry rot or insect attack in occupied rooms it is to be preferred to No. 1 as the odour is less persistent.

Regarding inflammability, the following flash points are quoted: Brunolinum, over 200° F, Brunophen No. 1, 140, and Brunophen No. 2, 111° F. More detailed information may be obtained from the company, whose head office is at 23 Sloane Street, London, S.W.1.

#### British Standards Recently Published

**B.S. 1186: 1955. Quality of Timber and Workmanship in Joinery. Part 2. Quality of Workmanship.** This second part of the Standard contains provisions regarding quality of workmanship and 'endeavours to define the standard considered acceptable for joinery for general housing and similar structures in respect of fit of parts and of surface finish'. The requirements for fit are specified with as much precision as is considered possible for various details of construction.

A simple form of definition for surface finish has been included, as at present it is not thought possible to develop a precise method of specification which would be generally acceptable. Price 2s. 6d.

**B.S. 659: 1955. Light Gauge Copper Tubes for Water, Gas and Sanitation.** This is the latest revision of the Standard, which was first published in 1936 and revised in 1944; it retains the method of designating tubes by their outside diameters, but the expression of tolerances has been clarified. Additional sizes of 5 in. and 6 in. have been included; the value of the tensile strength has been reduced from 17 to 16½ tons per sq. in., and a weight clause has been introduced. Price 2s. 6d.

**B.S. 1197: 1955. Concrete Flooring Tiles and Fittings.** This Standard is a revision and covers the dimensions and workmanship of flooring tiles made with cement and inert aggregate, specifying the cement that may be used and including (for the first time) sulphate-resisting Portland cement. Pigments, aggregate, shape and dimensions and finish and uniformity of colour are also specified. Price 2s. 6d.





# Scale of Architects' Fees for State-Aided Housing Schemes

AGREEMENT has been reached between the Association of Municipal Corporations, the Urban District Councils' Association, the Rural District Councils' Association and the Royal Institute in regard to a revision of the Scale of Fees for State-Aided Housing Schemes which is to come into effect for any agreements entered into after 31 October 1955. The revised scale is set out below and printed copies may be obtained on application to the Secretary, R.I.B.A.

The effect of the agreed revision is a further all-round increase of 20 per cent in the figures. The figures in relation to agreements for houses of less than 100 in number constitute an interim agreement and may be again amended after further negotiations.

Further negotiations are in progress with the three Associations in regard to a revision of the number of designs to be required in relation to the number of houses in a commission and the possibility of some adjustment to fees in respect of commissions involving less than a hundred houses.

If and when any further agreement is reached a separate announcement will be made. Any further adjustment to the scale thereby agreed will *not* have retrospective effect.

**SCALE OF ARCHITECTS' FEES FOR STATE-AIDED HOUSING SCHEMES (Excluding Multi-storey Flats) 1955.** Having regard to the desirability of employing architects for the design of houses of the smaller type likely to be erected by Local Authorities and Public Utility Societies and to aid in the solution of the housing problem generally, the R.I.B.A. have drawn up a special Scale of Charges relating thereto.

It is essentially in the interest of all parties that the architect should be charged with control throughout all stages of the scheme in order that his designs, drawings and specifications may be adequately interpreted.

The scale throughout is exclusive of reasonable travelling and out-of-pocket expenses and printers' charges for additional copies of drawings and documents.

The scale applies to a State-aided Housing Scheme (not including multi-storey flats) to be carried out on one site and executed continuously under one commission.

**A. Lay-Out.** For taking instructions, negotiating with Ministries, Government Departments, Regional and Local Authorities including the preparation of two copies of drawings required, preparing preliminary sketch to 1/2,500 scale and finished

drawing of the lay-out to 1/500 scale, and where the architect is employed to do this work in conjunction with the planning of the houses, the fees are to be: (see Table I).

**B. Constructional work for Roads and Sewers.** For making constructional drawings of the roads and sewers and preparing specification from a standard specification the fees are to be: £2 10 6 a dwelling. If general supervision by the architect is required this charge is to be increased to £3 5 0 a dwelling.

**C. House Design.** (i) For taking instructions, preparing sketch plans, submitting to Committee, making variations to suit requirements and re-submitting, preparing specification, 1/4-inch scale and 1/2-inch scale working drawings and full size details of the approved designs, submitting plans to the Local Authority as required by building regulations and supplying two copies of these documents for the use of the main contractors.

(ii) Obtaining quotations for P.C. sums, obtaining tenders from contractors, submitting tenders to the Committee and advising the Committee on the contract.

(iii) Supplying instructions to the contractors as provided for in the Conditions of the Building Contract, general supervision of the work but not constant super-

intendence, reporting to the Committee on the progress of the work, instructing Clerk of Works, issuing certificates, making out report under the maintenance clause of the contract and settling final accounts.

The fees for the services in paragraphs (i), (ii) and (iii) are to be: (see Table II).

It is the intention that a reasonable number of different designs shall be included in this scale up to a number not exceeding 10 designs in the larger number of dwellings.

In the case of 4 dwellings, two different designs are to be provided if required, and in the case of 6 dwellings three different designs are to be provided if required.

If the architect is not required to perform the services set out in paragraph (iii) the fee is to be 60 per cent of the total fee under this Clause.

If the architect is not required to perform the services set out in paragraphs (ii) and (iii) the fee is to be 50 per cent of the total fee under this Clause.

**D. Additional Services not included under A, B and C above.** The following services for which the architect may be employed will be charged on a *quantum meruit* basis: Negotiations relating to the site.

Making surveys, measurements and plans of the site or existing buildings and taking levels.

Making drawings for and negotiations with

Table I

For the first	4 dwellings	..	..	£2 17 6 a dwelling
" "	next 6	"	..	£2 10 6 "
" "	" 15	"	..	£2 3 0 "
" "	" 25	"	..	£1 16 0 "
" "	" 25	"	..	£1 12 6 "
" "	" 25	"	..	£1 9 0 "
" "	" 25	"	..	£1 5 0 "
" "	" 25	"	..	£1 2 0 "
" "	" 25	"	..	18 0 "
" "	" 25	"	..	14 6 "
" "	" 25	"	..	11 0 "
All over	225	"	..	7 0 "

Table II

For the first	4 dwellings	..	..	£31 13 6 a dwelling
" "	next 6	"	..	£28 16 0 "
" "	" 15	"	..	£25 18 6 "
" "	" 25	"	..	£23 1 0 "
" "	" 25	"	..	£20 3 0 "
" "	" 25	"	..	£17 5 6 "
" "	" 25	"	..	£14 8 0 "
" "	" 25	"	..	£12 19 0 "
" "	" 25	"	..	£11 10 6 "
" "	" 25	"	..	£10 1 6 "
" "	" 25	"	..	£8 13 0 "
All over	225	"	..	£7 4 0 "



Ground Landlords and Public Authorities not referred to above.

Making arrangements in respect of party-walls, rights of light and other easements. Additional work involved where the work is carried out under more than one building contract.

Making extra drawings for the client, contractors, sub-contractors or Clerk of Works' use.

Work in connection with litigation and arbitration.

**E. Abandoned Works.** Where any of the architect's services have been rendered under Sections A-C of this scale and the whole or part of the proposed scheme is subsequently abandoned, reduced fees shall be payable in accordance with the amount of work done.

NOTE.—At their meeting on 10 April 1945 the Council considered a report of the Practice Committee in which it was stated that communications from members and from local authorities had been received pointing out that in the case of housing in rural areas where the houses were on

many scattered sites Clause C of the Scale of Fees for State-Aided Housing Schemes as approved by the Council on 16 May 1944 provided a fee which was high in comparison with the fee which would be payable if the houses were on one site.

On the recommendation of the Practice Committee the Council have decided that in the case of rural housing undertaken for one local authority by one architect, where the houses come within an area of a radius of approximately five miles the housing may be considered to be on one site and Clause C of the Scale of Fees for State-Aided Housing Schemes applied accordingly.

This modification of the scale applies to Clause C only.

This Scale was first issued by the Council on 16 May 1944, amended in June 1945 and February 1949.

This Scale does not include fees for quantity surveying services.



## Early Architectural Societies and the Foundation of the R.I.B.A.

By Barrington Kaye, B.Sc.(Econ.), Ph.D.\*

THE FIRST architectural society to be formed in Britain of which any record remains was the Architects' Club, founded in 1791 by the architects James Wyatt, Henry Holland, George Dance and Samuel Pepys Cockerell.<sup>1</sup> Meeting at the Thatched House Tavern on 20 October 1791 for the purpose, they elected as original members eleven other distinguished architects, together with four honorary members. Membership of this exclusive club was limited to Academicians or Associates of the Royal Academy in London, to those who had received the Academy's Gold Medal for Composition in Architecture, and to Members of the Academies of Rome, Parma, Bologna, Florence or Paris. The entrance fee was five guineas; the

\* Since the above article was written, H. M. Colvin's authoritative *Biographical Dictionary of English Architects, 1660-1840*, has been published, which includes a brief but scholarly account of the development of the architectural profession in England. Although reference is made in that account to the societies whose activities are described here, it seems to the writer that the two descriptions are complementary rather than repetitive, and he feels justified therefore in allowing the present article to go to press.

<sup>1</sup> Details of the rules of the Club are given in an appendix to T. J. Mulvany (Ed.): *The Life of James Gandon, Esq.*, Dublin, 1846. See also J. Gotch (Ed.): *The Growth and Work of the R.I.B.A.*, London, 1934, 1-2, and *R.I.B.A. JOURNAL*, 1911, XVIII, 183-4 and 240. The constitution of the Architects' Club was probably modelled on that of the Society of Civil Engineers, founded in 1771; see Sir Alexander Carr-Saunders and P. A. Wilson: *The Professions*, Oxford, 1933, 157. The Royal Academy, founded in 1768, although it provided limited architectural instruction, cannot be deemed an architectural society.

annual subscription was the same. The club met once a month, when members were required to produce a new design or pay a fine.

Although the Architects' Club promised to be, and in fact soon became, a fairly typical example of the study associations that sprang up in many of the newer professional occupations during the 18th century,<sup>2</sup> yet there was evidence in its early stages of that concern with practice and professional conduct without which a professional association cannot fulfil its function. In 1792, according to an entry in Sir John Soane's notebook, the members met 'to define the profession and qualifications of an architect'.<sup>3</sup> In 1793, under the style of The Associated Architects of London, the club published a competent report on the cause and treatment of fires.<sup>4</sup> In 1796 Mylne put a resolution before the

club which finds its counterpart in the present-day Code of Professional Conduct.<sup>5</sup> But probably the most significant incident in the history of the club, and the one that determined its subsequent development, was the controversy between Soane and his fellow-members over architects' charges. Soane held that the fee of 5 per cent included taking out quantities, and strongly opposed the suggestion that an extra 2½ per cent should be charged for measuring. It is probable that his high standards of professional conduct lost him the goodwill of several of his contemporaries; certainly when in 1798 he demanded a joint apology from the club on account of a pasquinade dubbing him 'the modern Goth' for his design of the new Bank of England, he found little sympathy.<sup>6</sup> He foolishly took legal action, and lost his case.

It is difficult to say what the character of the Architects' Club might have become had Soane dominated its policy; as it was, it soon became little more than an after-dinner club. In 1834 its members were invited to amalgamate with societies then about to form an architectural institute, but they declined 'altering the character or extending the views of the club'.<sup>7</sup>

A second, somewhat less exclusive, architectural society was formed in 1806, styling itself the London Architectural Society. This was another study association, of which the members agreed to produce an original design and an essay each year, failure to do which involved the usual fine. The annual subscription was two guineas and the society met fortnightly. A volume of *Essays* was published in 1808,<sup>8</sup> and a further volume in 1810,<sup>9</sup> after which there is no record of the society's activities.<sup>10</sup>

<sup>5</sup> 'Mr. Mylne proposed the following draft of a resolution to be ballotted for at the next monthly meeting: Resolved that it is the opinion of this Society, if any Member shall solicit or make application directly or indirectly to be employed or advised with in any business of the profession, which may be performing or about to be executed, by the Orders of, or under the direction of any Person or body of Men, during the known employment of any other Artist therein, as to the making or (settling ?) designs; the Execution thereof; or the settling the (Amount) & (Valuing) thereof; and also in any Case where he may be asked & ( . . . ? ) by such person or body of Men to be so employed, shall proceed therein without consulting the Artist actually employed previous thereto—He shall be considered as acting contrary to the Established Practice & derogatory to the honour of the profession of an Architect.' *Draft of Mr. Mylne's Resolution*, MSS., Soane Museum, Cupboard 1, V, A, Cf. 'An architect must at all times, with due regard to the interests of his client, act loyally towards his professional colleagues. For example . . . He must, before accepting instructions to proceed with any work upon which it is obvious another architect has been employed, notify the architect last employed.' Architects Registration Council: Code of Professional Conduct, London, 1949, 4.

<sup>6</sup> For the affair of the Modern Goth, see Bolton: *The Portrait*, op. cit., 59-79. Soane: *A Letter to Earl Spencer*, London, 1799, and Soane: *Memoirs of the professional life of an Architect*, London, not published, 1835.

<sup>7</sup> *A Plain Statement of Facts Connected with the Coalition between the Society for the Promotion of Architecture and Architectural Topography, and the Society of British Architects*, London, 1834, 11.

<sup>8</sup> *Essays of the London Architectural Society*, London, 1808.

<sup>9</sup> *Essays of the London Architectural Society . . . Part the Second*, London, 1810.

<sup>10</sup> There exist in the R.I.B.A. Library, however, four bound volumes of MSS., comprising *Essays of the London Architectural Society*, which are severally dated 1845-7. None of the names given in these volumes is to be found in the list of members given in the *Essays* of 1808. It is possible that the Society was in existence during the 37 years between, or that it was revived in 1845, or that it is simply a coincidence of nomenclature. No record of the 1845 Society appears to exist apart from these MSS.

There was little professional activity among architects during the first three decades of the 19th century, although mention should perhaps be made of the short-lived Architectural Students' Society, formed in 1817 to press the Council of the Royal Academy for the formation of a school of architecture.<sup>11</sup> There was little building activity during the Napoleonic wars, but during the 1820's the building industry flourished, and hundreds of unqualified persons set up as architects and surveyors—terms which were synonymous to the public of the time. Their malpractices eventually brought the whole profession into disrepute, and the more reputable architects as well as responsible members of the public began to press for the formation of a professional association which would admit only qualified and trustworthy architects to membership.

The Architectural Society, founded in 1831, did not meet these demands; its main aim was simply to provide facilities for architectural education. Qualification for membership consisted in 'having studied the profession of Architecture in the office of an Architect for five years'; that is to say, it was a society of architectural pupils, rather than one of architects proper. The society met fortnightly, and held quarterly meetings to discuss business. The annual subscription was three guineas, and the society's rooms, with its library of architectural textbooks, were open daily from 10 a.m. to 5 p.m., and from 7 p.m. to 9 p.m.<sup>12</sup> The Architectural Society thus provided valuable amenities for the students of the time, but it did nothing to provide the profession with an effective association.<sup>13</sup>

Three years later, one of the first articles in the new ARCHITECTURAL MAGAZINE, started in 1834, described some of the grosser malpractices of the day:

It is now the fashion among some of the principal architects, not to allow the builder to employ a surveyor to measure his work, but to insist upon the builder leaving it entirely to the architect's clerk, or to a surveyor named by him. . . .

Another disgraceful practice, which is either owing to ignorance or knavery, is, that some architects deceive their employers, by making very pretty and attractive drawings, and reporting that the expense of carrying these into execution will be about half or two-thirds of what it actually turns out to be. . . .

<sup>11</sup> See *Resolutions of the Architectural Students' Society*, and *List of the Architectural Students of the Royal Academy*, London, 1817, and a printed circular letter sent in the same year by the Society's secretary, a copy of which is to be found in the Soane Museum.

<sup>12</sup> See *Laws and Regulations of the Architectural Society*, London, 1835, for further details of the Architectural Society's rules.

<sup>13</sup> Although in 1833 T. H. Wyatt, afterwards to become President of the R.I.B.A., read a very interesting paper to the Architectural Society in which he discussed the possibility of government architects, stressed the importance of public opinion, and touched on the question of professional ethics. See T. H. Wyatt: *The Advantages Likely to Result from the Establishment of the Architectural Society*, MS., 1833, R.I.B.A. Library.

Another very paltry trick common among some architects is, their custom of exacting from the builder a commission for all works done under their direction; and, if this be refused, informing the builder that his services are no longer required.<sup>14</sup>

The writer suggested that the only remedy lay in the formation of a society '... to make rules for the governance of the profession'.<sup>15</sup> This suggestion was repeated by others,<sup>16</sup> and at length, on 8 January 1834, a number of individuals, including both architects and surveyors, met together at the Freemason's Tavern for the purpose of forming an Institute of Architects.

Apparently those present at this meeting could come to no satisfactory agreement, although it was suggested that a committee should be formed to draw up a draft constitution. Accordingly two separate groups, each forming itself into a society, appointed a committee to do so. One, meeting the following week at the rooms of H. Kendall, Esq., in Pall Mall East, after some discussion on the virtues of the title 'The Wrenian Society', at length decided to call themselves The Society of British Architects. This society was composed only of architects, and it was their objection to '... the introduction of an objectionable class of persons as members', i.e. measurers, that had broken up the meeting of 8 January.<sup>17</sup>

At the same time, however, another group had formed itself into The Society of Architects and Surveyors, and had appointed a committee to draft a constitution for the proposed institute. This was presented to a meeting of the society held at the Freemason's Tavern on 19 February. The Report<sup>18</sup> provided for a library, museum, *conversazioni*, and the reading of essays, but no mention was made of a code of conduct, nor were the qualifications for entry very severe. Just before the meeting started, two officials of the rival Society of British Architects waited on Mr. Cresy, the chairman, with the suggestion that the two societies be amalgamated. This suggestion was discussed by the Society of Architects and Surveyors, and agreed upon. A committee of five architect-surveyors was accordingly appointed, and subsequently

<sup>14</sup> 'Scrutator': 'On the Present State of the Professions of Architect and Surveyor, and of the Building Trade, in England', ARCHITECTURAL MAGAZINE, London, 1834, I, 16. For a contemporary discussion of the practice of 'measuring', see James Noble: *The Professional Practice of Architects*, London, 1836, 12-16.

<sup>15</sup> *Idem*.

<sup>16</sup> See, for instance, J. A. Bell: *A Letter to Lord Farnborough, G.C.B., &c. &c., on the expediency of having a Chartered Society for the Advancement and Protection of Architecture*, Birmingham, 1834.

<sup>17</sup> The main sources for the meetings described in the following paragraphs are (1) *A Plain Statement of Facts Connected with the Coalition between the Society for the Promotion of Architecture and Architectural Topography, and the Society of British Architects*, London, 1834; and (2) a volume of bound MSS.: *Miscellaneous Papers connected with the formation of the R.I.B.A. (1834-5)*, in the R.I.B.A. Library. Although (1) was written anonymously by an obviously interested party, there seems no reason to doubt its accuracy, more especially since no attempt was made to refute it at the time. At no stage do (1) and (2) contradict each other; (2) is silent, however, about many of the meetings, etc., detailed by (1).

<sup>18</sup> Report of a Committee of Architects and Surveyors, folio sheet, London, 1834.

the Society of British Architects appointed a committee of equal size. A few days later a meeting took place between the two committees, but as the Society of British Architects had not yet finished its draft constitution it was agreed that the discussions should be postponed until this had been done. Meanwhile, the old-established Architects' Club was approached and asked to join the proposed coalition, which it declined to do.

At length, some time in April, the report of the Society of British Architects' committee was ready.<sup>19</sup> The proposed rules were much severer than those of the architect-surveyors. The institution was to consist of Fellows, to be architects of at least five years' standing, and Associates, who would be required to submit to an examination in '... the theory and practice of design or composition in architecture; the theory and practice of construction; the usual and customary practice of Business'.<sup>20</sup> Provisions were made for a code of professional conduct, and specific reference was made to 'measuring', the practice of which would lead to disqualification. The *Prospectus* also proposed the formation of a school of drawing and lectures for students. A copy of this far-sighted draft was sent to Sir John Soane, with a letter (30 April) asking whether he would be prepared to become the first President of the Institute.<sup>21</sup> Owing to the rules of the Royal Academy, where Soane was Professor of Architecture, he was obliged to decline the invitation.

As was to be expected, at the next meeting of the two committees, to decide on the two draft constitutions, the architect-surveyors strongly objected to the disqualifying clause in the British Architects' *Prospectus* relating to measuring. No satisfactory agreement was reached and shortly after the meeting the chairman of the Society of Architects and Surveyors wrote a letter (23 April) to the Society of British Architects, urging the removal of the offending clause.

A further meeting was held, at Mr. Rainy's gallery on 13 May, at which members of both societies were present, as well as the two committees. By somewhat irregularly turning it into a committee meeting, and by then calling upon the non-committee members of their society to vote, the Society of British Architects succeeded, despite the protests of the architect-surveyors, in passing a motion for the retention of the measuring clause.

A week later the discomfited Society of Architects and Surveyors met again at the Freemason's Tavern, where they framed

<sup>19</sup> *Prospectus for the formation of a society to be called the Institution of British Architects*, London, 1834. The title of an MS. in the previously mentioned collection of MSS.: *Miscellaneous Papers &c.*, suggests that the *Prospectus* was written by James Savage. See the third MS.: *Institution of British Architects. Sketch of Original Constitution and Laws*, by J. Savage.

<sup>20</sup> *Idem*.

<sup>21</sup> See A. T. Bolton: *The Portrait of Sir John Soane, R.A.*, London, 1927, 508-12, for this letter, and for the *Prospectus* in full.

a note of protest at the irregularity of the meeting of 13 May. This was duly handed to the chairman of the meeting of the Society of British Architects on the next day, 21 May. The next morning, 22 May, notes were received by the architect members of the Society of Architects and Surveyors (i.e. those who were not measurers), informing them that they had been elected to membership of the Society of British Architects the night before.

Nothing more was heard of what was left of the Society of Architects and Surveyors except for an anonymous pamphlet evidently written by one of the indignant architect-surveyors not invited to the more exclusive Society of British Architects: *A Plain Statement of Facts Connected with the Coalition between the Society for the Promotion of Architecture and Architectural Topography, and the Society of British Architects*.<sup>22</sup>

Meanwhile, it had been felt by the victorious Society of British Architects that the proposed institution should be founded by the senior members of the profession; several of whom were by this time interested. Two well-known architects, Kay and Gwilt, had been present at the meeting of 13 May at which the Society of Architects and Surveyors was outvoted, and they accordingly arranged a meeting of senior architects which was held on 4 June.

At a meeting held at Mr. Rainy's Rooms, Regent Street, June 4, 1843. Present: Mr. Kay in the Chair; Messrs. Seward, Gwilt, Papworth, Basevi, Barry, D. Burton. It was resolved. That the Gentlemen present at this Meeting do form themselves into a body for the promotion of Architecture and that they do nominate & invite the following Gentlemen of the Profession to join them in that object, namely: Messrs. Robinson, Cresy, P. Hardwick, Lee, G. Taylor.<sup>23</sup>

Gwilt prepared an address, setting forth the aims of the Institute, which was corrected by Kay, finally approved at a meeting on 2 July and published.<sup>24</sup> This Address contained only the names of those twelve architects present or elected at the meeting of 4 June, who thus 'founded' the Institute of British Architects. The following day, 3 July, a meeting was called of all the architects who had been present at the original meeting in February, when it was announced that the Institute had been

founded and that the Society of British Architects was therefore wound up. By the following year all the members of the society had been elected to the Institute, five of them being on the Council. The official opening meeting of the Institute of British Architects was held on 15 June 1835. To it were invited the presidents and principal members of the Antiquarian, Dilettanti, Civil Engineers', Geological, Asiatic, Royal and Architectural Societies and also of the Royal Academy.

There is no doubt that the Institute of British Architects, afterwards the R.I.B.A., gave to the profession the association it needed. While the rules adopted were not nearly so comprehensive as those proposed by Savage in the *Prospectus*, yet they included a clause disqualifying measurers from membership, and providing against association with trade:

If at any time there shall appear cause for the expulsion of any Fellow or Associate, either for having engaged since his election in the measurement, valuation, or estimation of any works undertaken or proposed to be undertaken by any building artificer, except such as are proposed to be executed or have been executed under the Member's own designs or directions; or for the receipt or acceptance of any pecuniary consideration or emolument from any builder or other tradesman whose works he may have been engaged to superintend; or for having any interest in or participation with any trade contract, or materials supplied at any works, the execution whereof he may be or have been engaged to superintend; or for any conduct which, in the opinion of the Council, shall be derogatory to his character as a gentleman in the practice of his profession, such propositions shall be entertained and judged of and determined by the Council only.<sup>25</sup>

There is little doubt that this disqualifying clause enabled the R.I.B.A. to exclude most of those 'architects' whose malpractices had brought the profession into public disrepute, and thus, ultimately, to raise its esteem once more. To this end, the exclusion of the measurers was justified, and the somewhat irregular action of the Society of British Architects in outvoting their rival's committee may be seen as the turning-point of the architectural profession in the 19th century.

The author would like to thank the Librarian R.I.B.A. for his permission to study in the R.I.B.A. Library and for the unfailing courtesy of his staff.

<sup>25</sup> Ibid., 9.



## Practice Notes

Edited by Charles Woodward[4]

**MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Requisitioned Houses and Housing (Amendment) Act, 1955.** This Act came into operation on 6 June 1955 and its object is to enable Councils to wind up the use of requisitioning for housing purposes by 31 March 1960. In order that all owners of requisitioned property may be aware of the way in which the Act affects their interests, the Ministry have issued a leaflet which all owners of requisitioned property should receive from the Council.

The Ministry have also issued Circular 39/55 dated 31 August which sets out in detail the provisions of the Act, including payment of special compensation for owners who accept the occupants of their houses as their tenants and for the derequisitioning of the houses concerned. The release, with certain limitations, of requisitioned houses to their owners as they become vacant and early release of houses to owners who are suffering severe hardship are also explained. The circular is obtainable at H.M. Stationery Office, price 9d. net.

The Requisitioned Houses (Compensation) Regulations 1955 (S.I. 1955, No. 1331) came into operation on 31 August, and prescribe the maximum rate of compensation payable where an owner has accepted a licensee of his house as a statutory tenant. The Regulations are obtainable at H.M. Stationery Office, price 2d. net.

**The Ministry's Report.** The Report of the Ministry's work from 1950-51 to 1954 has been issued and is obtainable at H.M. Stationery Office, price 7s.

The Report states that one of the most difficult kinds of appeal is that relating to the external appearance of buildings. A general improvement in design can come about only as a result of an improvement in public taste and an awareness of the possibilities of good design. This process of improvement is bound to take a long time. There are cases where a developer proposes to erect a building of a modern design, often with a flat roof, which while acceptable and good in itself is very different from other development in the vicinity. In these cases the Minister, in common with most local planning authorities, is generally reluctant to refuse permission for a good design purely on grounds of incongruity, though occasionally the maintenance of uniformity in general outline is justified.

Another special difficulty arises over the external appearance of buildings in areas of outstanding beauty, such as the Lake District, where the traditional building materials have become too expensive for general use.

(Note. The 1947 Planning Act provides for an appeal on external appearance to an independent tribunal instead of to the Minister. This tribunal has not been established under a Development Order.)

<sup>22</sup> Op. cit. This pamphlet was reviewed in the ARCHITECTURAL MAGAZINE, 1834, I, 275, in the following words: 'The object of the author is to give "a complete expose of the irregular proceedings of the Society of British Architects"; but, as we do not wish to enter into the merits of the case, we merely recommend his pamphlet to those who do.' The question of nomenclature becomes very complicated: whether the Society for the Promotion, etc., was the suggested title for the Institution proposed at the original meeting of 8 January, or whether it was an alternative title of the Society of Architects and Surveyors (as seems to be suggested by the title of the pamphlet), is difficult to decide. In the pamphlet, the second group is styled The Society of Architects and Surveyors, and this has been accordingly left to stand.

<sup>23</sup> MS. letter in the R.I.B.A. Library, pam. Q7, 101.

<sup>24</sup> Address of the Institute of British Architects, explanatory of their views and objects, and the Regulations adopted at a meeting, held July 2nd, 1834, London, 1834. The MS., proof and final copy of this Address are all in the R.I.B.A. Library.



**Guarantees of Advances Made by Building Societies.** Circular 45/55 dated 14 September refers to the simplification of schemes of guarantee sent to local authorities with Circular 42/54 dated 4 May. Those schemes are replaced by one scheme which is now set out in Appendix I attached to Circular 45/55. The scheme applies to houses where the purchase price or valuation (whichever is the lower) is not more than £2,500. The maximum advance by the society will be 95 per cent for houses built after 31 December 1918 and 90 per cent for others. The maximum period for the repayment of the advance will be 25 years.

Appendix III sets out the model form of guarantee made between the Authority and the Building Society and Appendix IV contains the model form of application for a guarantee. The Circular is obtainable from H.M. Stationery Office, price 6d. net.

(Note. The Department of Health for Scotland is operating a similar scheme referred to in Circular D.H.S. 47/1955, dated 14 September.)

**Improvement Grants.** The Minister stated in the House of Commons on 8 July that grants for improvements and conversions under the Housing Act 1949 and amending Acts had been approved during the periods as follows:

For the year ended 31 March 1952, 1,462.  
For the year ended 31 March 1953, 1,979.  
For the year ended 31 March 1954, 3,178.  
For the year ended 31 March 1955, 19,702.

During the first quarter of 1955, 7,113 grants had been approved.

**Slum Clearance.** Advice to intending house-purchasers. Circular 54/55, dated 26 September, addressed to housing authorities, states that it is necessary to ensure as far as possible that intending house-purchasers do not, in ignorance of the Council's intentions, buy houses likely to be included in a clearance area in the next five years or so or to be the subject of demolition orders. The Minister has specially in mind people who are buying for their own occupation, including sitting tenants.

The Minister accordingly suggests that Local Authorities should take early action on the following lines:

1. To issue a general reminder to the public through the Press, and in any other way they think proper, that they are preparing a comprehensive programme of slum clearance; and to make such other statements from time to time as they think fit;
2. To advise those who are proposing to buy older houses in the district to make inquiries at the Council offices in order to find out whether they will be affected by the slum clearance programme. Sometimes it may be difficult to give a very definite answer. For example, the house may be in an area intended either for immediate clearance or deferred demolition, but not yet precisely defined. But the Council's object should be to give the inquirer as much information as they reasonably can to help him in making his decision.

**SURVEYS OF PREMISES FOR AN INTENDING PURCHASER.** In recent years there have been many cases brought against architects and surveyors in respect of alleged negligence in reporting upon premises for a prospective purchaser. Notes of these cases have appeared in the JOURNAL from which it would appear that each case must depend on the exact purpose for which the report is required. If that is so then the professional man should ascertain clearly from his client at the outset the extent of the survey required. This will govern the fee to be charged, as what might be called a visual survey would necessarily be less costly than a detailed survey, involving an examination of hidden parts of the building which could only be done by opening up floors, exposing foundations, and the use of ladders. A thorough test of the drainage system and the electric installation together with tests of any hot water and heating system would also be necessary.

In many cases the premises to be surveyed are occupied, and it is obvious that unless a vendor will allow the detailed survey to be made the report must be so qualified as to lessen its value to the client. A visual report may say that no evidence of dry rot could be seen, but that that was not conclusive evidence that dry rot did not exist. The drains may appear to be in accordance with modern requirements, but in the absence of a test no further opinion could be expressed. There may be no visual evidence of settlements in the premises, but shallow foundations in a clay soil might, in a dry season, lead to cracks appearing in the future. Unless such qualifications are made in the report a professional man is liable to a charge of alleged negligence if defects are found after the purchase of the premises has been completed.

It would appear that in deciding whether or not there has been negligence the Court will consider the purpose of the survey and the agreement between the parties as to the extent of the survey. The extent of a survey must depend on the willingness of a vendor to have the premises opened up, and if he withholds consent it would be prudent for the professional man before undertaking an inspection of the property to make it quite clear to his client that the report must necessarily be qualified. The client must then consider whether or not to rely on what the professional man can deduce from a visual inspection of the premises.

It is suggested that clear agreement between the parties at the outset might avoid litigation after a purchase has been completed, as in all cases of alleged negligence the Court will carefully consider the agreement and the terms of the report, having regard to the facts of the particular case.

**RATING AND VALUATION (MISCELLANEOUS PROVISIONS) ACT 1955.** This Act came into operation on 27 July and provides for the simplification of appeals against the assessment of property for rating purposes and the clarification of the system by which a rateable value is

ascertained. A summary of the Act is given in the JOURNAL OF PLANNING AND PROPERTY LAW for September 1955.

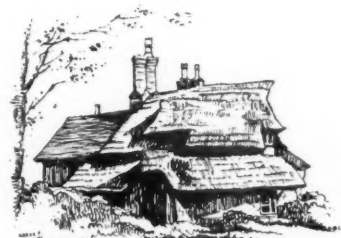
**PLANNING APPEAL.** Planning permission was refused by a local planning authority on the ground that the site was unfit for development because of the danger of subsidence. The appellant contended that the site was not unfit as alleged by the local planning authority and that the reason given was not in any event a proper ground for refusing planning permission.

The Minister, in giving his decision dismissing the appeal, observed that the disused street near the site had sunk two inches since 1951 and he was of the opinion that the extra weight of the proposed new building might increase the danger to the adjacent houses which, although they show no sign of uneven settlement at the moment, face a drop of 100 ft. in 300 ft. towards the river.

## LAW CASE

**Audley Land Co. Ltd. v. Kendall.** Report by court expert—irrelevant matter expunged. In this action the plaintiffs sued for money under a contract to build a house and the defendant alleged defects in the house. The case was referred to an official referee and a court expert was appointed to inquire and report upon certain questions set out in a 'Scott' schedule containing 27 items and the defendant's comment. The expert, having visited the house and completed the schedule, appended to the end of it two paragraphs which began: 'I am of the opinion that defendant has generally been given a very inferior job, and that the mental anxiety and perturbation consequent therein are not of his own making' and which referred to a letter written by him to the clerk to the official referee. In the letter the expert repeated the statement that the defendant had received poor work generally and also made certain criticisms concerning the architectural service which he had received under the contract. The plaintiffs applied for an order that the two additional paragraphs and the letter should be struck out, on the grounds that the expert had gone outside the terms of his appointment and that the additional matter was prejudicial to them.

The Official Referee, acting under his inherent jurisdiction, ordered that the two additional paragraphs be expunged from the schedule. (1955. 2. All England Law Reports. 273.)





# Book Reviews

**Architects' Year Book 6.** Editor Trevor Dannatt. 10 in. 260 pp. inc. pp. of illus. text illus. Elek Books Ltd. 1955. £2 2s.

The *Architects' Year Book* does two things: it provides a platform for serious theoretical investigations and proposals, and it gives a report on the general field of architecture (which includes the plastic arts and urbanism).

This new volume presents in microcosm the confusion of the battleground of architecture today. A rearguard action is fought by an abstract-art veteran; Paul Kriesis mounts a magnificent attack on the New Towns; we are given a staff-college reassessment of the tactical employment of 'Harmony of Forms in Space and Time', and an honest bit of pioneer spade-work on 'Open Space and Housing'. And so on.

The strategic necessity for the battle is made obvious in this, as in previous Year Books, by the work that is shown, which is the best that is available. The Editor's policy of giving foreign architects an opportunity to survey the work of their own countries reveals in most cases a depressing display of inert modernism; and surely furniture and decoration have reached a point where something must happen.

Accurate and up-to-date information is the only basis for action, and therefore we must thank Trevor Dannatt for his latest report from the front. That the total effect is still saddening is not his fault. There are just too few architects trying.

PETER SMITHSON [4]

**Schulbauten** by Erika Brödner and Immanuel Kroeker. 11 in. 255 pp. text illus. Munich: Hermann Rinn. 1951. £3 5s.

A general section on modern school building includes articles on desk design, on different parts of the school from staircases to cookery classrooms, and on lighting. The rest of the book consists of illustrated examples, giving in each case the architects' names, the orientation and lighting of classrooms, and construction details.

Many of the schools illustrated are of course German, but by no means all; from England there are several elementary schools and two technical colleges, while other countries are also represented.

This is a well-produced book, with copious photographs and floor plans, the latter having keys in English.

**The Life and Work of James Gibbs (1682-1754)**, by Bryan Little. 11 in. xiv + 210 pp. + 22 pls. text illus. Batsford. 1955. £1 5s.

James Gibbs, standing as he does between Wren and Vanbrugh on the one hand, with Burlington and his Palladians on the other, holds a place relative to the mainstream of early 18th century architecture which is not easy to define clearly. His years of study in Rome, principally under the mastership of Carlo Fontana, fed a talent which found its way to architecture through a novitiate there at the Scots Catholic Mission College.

Returning to London in 1709, he established himself within the next 15 or 20 years as one of the leading architects of the time, and the seal was set on his reputation by the publication in 1728 of his well-subscribed *Book of Architecture* which spread his influence far wider than did his buildings themselves.

St. Martin-in-the-Fields and the Cambridge Senate House are probably his best-known designs, the former being taken so far granted that its integrated solution of problems posed in providing for Anglican congregational worship, as well as its restrained Roman detailing, pass unobserved through familiarity. The Radcliffe Library at Oxford, for which a previous scheme had been submitted by Hawksmoor, displays Gibbs' absorption of the Italian Baroque more obviously than any of his executed works, with its vigour and cross-emphases evident in a greater degree than his northern reserve usually permitted.

In the present book Mr. Bryan Little has brought together a useful quantity of new material, as a glance at his appended list of primary sources will show, although the picture of Gibbs' later life in London seems a trifle shadowy and the technical terminology throughout could have been more carefully considered. Unfortunately the reader repeatedly wishes for more lavish illustration, one good photograph or plan being worth a yard of architectural description in such a context.

Although not a definitive assessment of its subject, in that it does not set Gibbs finally against his period and his contemporaries, this book nevertheless contains valuable information and references, and provides much of considerable interest on an architect whose life and work had not previously been treated in a complete volume.

ELAINE DENBY [4]

**The City and Royal Burgh of Dundee.** Survey and Plan 1952, by W. Dobson Chapman and Partners. (Dundee: City Corporation.) 2 vols: 1, The city survey; 2, the city plan. 10½ in., 10 in. repr. typescript. var. pp. + folding maps. [1954.] No price.

Queen Victoria said that 'the situation of the town is very fine, but the town itself is not so'. The authors of this survey and plan, however, believe that Dundee is not overgrown beyond redemption (the population is 177,000), and offer a very detailed plan which will take twenty years—at least—to complete.

It would be unfair to complain of this work's bulk, because the authors were prevented from compressing its two fat typescript volumes into a printed one, as they did with their report on Aberdeen. As it is, one can only remark their thoroughness: their survey includes a history of Dundee from the quaternary Ice Age to 1951. They even record that the price of the DUNDEE WEEKLY ADVERTISER was raised in 1812 from 6d. to 6½d.

Numerous maps give a good general picture of the survey and plan, although minute print and complicated notation make them hard to follow in detail; a few

of the proposals are illustrated by rather sombre sketches. Several things could be added to the list of corrigenda, including the mis-spelling of 'corrigenda', and there are lapses into jargon.

These criticisms do not affect the substance of the plan itself, which is both painstaking and imaginative. Dundee has asked for advice and, it is to be hoped, will take it.

**Human Engineering Guide for Equipment Designers**, by Wesley E. Woodson. 10½ in. × 8 in. var. pp. text illus. Berkeley, U.S.: Univ. of California Press; Lond.: Cambridge U.P. 1954. £1 6s.

This book was compiled in the Human Engineering Branch of the U.S. Electronics Laboratory of San Diego. A number of Medical Research Laboratories, The Wright-Patterson Air Force Base and several university and industrial representatives contributed. Intended to help engineers and other designers of equipment to consider the human factors involved, it provides a central body of information, the five chapters covering the design of equipment and workspace, vision, audition, body measurement and other factors.

Here is an unusual attempt to bring together material drawn from psychological and physiological research and to consider certain basic human characteristics and their effect upon the successful design of equipment. The presentation is bold and dramatic, but the usefulness of the subject-matter is slightly impaired by the system of classification adopted. In the first chapter, for example, you can find the force to be applied to a light switch, the proper size of lettering on display boards, the size of controls, shapes of seats and many other useful measurements. But in later chapters the information is not directly related to the problem of designing equipment and is intended to provide background knowledge.

One has the impression that many bridges are still required to link knowledge of the human being with knowledge of factors conditioning his environment.

BRUCE MARTIN [4]

**Hospital Planning Requirements**, by Guy Aldis. 9½ in. xiv + 257 pp. incl. pls. + (3) folding pls. text illus. Pitman. 1954. £4 5s.

The subject of hospital planning is vast, and very few architects have undertaken a detailed study of the many problems involved. Guy Aldis's book *Hospital Planning Requirements* is a welcome addition to the small stock of literature on hospital planning, very little of which deals specifically with conditions obtaining in Britain. In this book the author sets forth in detail the requirements of the casualty department, the out-patients department, the ward unit, the operating theatre suite, the X-ray and radio-therapy departments, the pathological laboratories and the mortuary block. The requirements of each department are carefully tabulated, the text is clear and concise, and there are many explanatory diagrams. The interdependence of the various departments has been taken

into account and the effect on planning of some of the modern trends in medicine has been studied.

A great merit of this book is that Mr. Aldis has approached his subject with the knowledge that the ideal cannot be achieved. He recognises that no hard-and-fast rules can be laid down for the planning of a mechanism as complex as that of a large general hospital, where the human element remains one of the most important, and most variable, factors. He has taken considerable pains to study the needs of the whole community. For patients in casualty ward, for example, 'the atmosphere must be cheerful'; and, in addition to relatives, accommodation is even reserved for 'other interested persons'; for in-patients a recreation (or day) room is insisted upon, and also window sills low enough 'to

permit patients seeing out when lying down in bed'. The duties of the nursing staff have been carefully considered and, wherever possible, their journeys curtailed; throughout the book Mr. Aldis has tried to work from the basic contention that 'nurses are employed to nurse and not to act as messengers'.

In a subject as complex as hospital planning, it would be very strange if all the recommendations were uncontroversial. Not every consultant, nor every nurse, will agree with Mr. Aldis at every point, but this book remains exceedingly valuable for architects, and particularly those who are unfamiliar with the many specialised problems of the detailed planning of hospitals. It is the fruit of many years' experience in the field of hospital design.

R. LLEWELYN DAVIES [4]

**Cruck-framed Buildings of Leicestershire**, by V. R. Webster. (*Leicestershire Archaeological Society*.) 9½ in. (34) pp. incl. (2) pp. of illus. + folding table + v pp. of illus. text illus. Leicester (c/o Univ. Coll.). 1954. 6s. Interest in the primitive mode of timber cottage construction embodying the 'cruck'—a dialect word not to be found in the O.E.D.—has grown during the last twenty years. There is still no general treatise, apart from a few articles, but several county surveys have appeared, of which this is one of the most thorough; it is to be hoped that others as good will follow. A detailed text, defining the word, explaining the difficulty of dating, surveying the geographical range and describing the examples is illustrated by a county map, a plan of a typical village, photos, and scale drawings of constructional details. H. V. M. R.

## Correspondence

### ENGLISH MEDIAEVAL ARCHITECTS

The Editor, R.I.B.A. Journal.

SIR,—In the course of a long and generous notice of my book *English Mediaeval Architects*,\* Mr. Eden puts forward in a new form a claim for impersonal architecture in the Middle Ages, produced by builders merely acting as amanuenses for the ideas of great theological minds. Such a view, if accepted, would make architectural history pointless, except as a mere handmaid to the study of ecclesiastical thought.

It may up to a point be accepted that mediaeval writers took relatively little interest in builders; but, as Mr. L. F. Salzman has elsewhere pointed out, it is only 'possible, if you will take the trouble, to find out who designed some modern building'. If we consulted only the modern intellectual equivalents of the mediaeval theologians and chroniclers, we should learn very little of Lutyens or Baker or even the much-publicised modernists. Yet even in this comparison it should not be overlooked that there is evidence proving that many mediaevals were interested in the master craftsmen (see my *Gothic World*, 1950, especially pp. 39–41).

But when Mr. Eden goes still further to state that there is no architectural importance, but only a 'theological affirmation' in the west front at Wells, his whole position is refuted by the very literature to which he appeals. The ecclesiastical chroniclers themselves record the 'beauty' of mediaeval buildings and even (as in the case at Beverley quoted by Mr Salzman: *Building in England*, p. 377) the fact that some craftsmen were more concerned with beauty than with strength. A few years ago I devoted more than one-third of *The Gothic World* to a demonstration, backed by many quotations and full references, of the amply 'architectural' standing of the great building masters, and cannot repeat

this here. But it is relevant to stress the concurrence of other lines of evidence which prove the comparatively limited part in the shaping of design played by theological dictation.

*The New Oxford History of Music* (vol. II, 1954, pp. 241, 273–4, 285, 313) shows: (1) the 'great significance attached to originality' by the troubadours and trouvères of the 12th–13th century, as opposed to the 'dictated' church music of the pre-Gothic period; (2) that 'actual music is of far greater value as evidence to historians of the art than the treatises', most of which were lecture notes of academic teaching often as much as a century behind current practice; (3) that ecclesiastical censorship had grown so slack, long before 1300, that 'extraordinary doctrinal statements' are found in texts set to church music.

Even more remarkable is the evidence provided by the architectural history of the Bridgittine Order, studied by Hr. Bertil Berthelson (*Birgittinerordens Byggnadsskick*, Stockholm, 1947). St. Bridget in her 'Revelations' laid down in great detail the planning and form to be taken by the houses of her Order, and the mother-house of Vadstena was begun under her own supervision. Yet the actual monasteries remaining in Denmark, Finland, Estonia and Germany differ widely, not only in materials and detail, but even in the (theoretically) dictated layout and plan. Here are tangible proofs that the mediaeval architect not merely possessed as much individuality as his later counterpart, but displayed it even when bound by the stereotyped scheme of a rigid and exacting client. Let us indeed study the ideas of the great mediaeval clients, St. Bernard and Abbot Suger among them; but let us avoid the misconception that these ideas 'governed the mediaeval builders' so as to deprive them of artistic personality. Or else let us stop talking about the history of design and (for example) give the architectural credit for all our contemporary school buildings to Mr. R. A. Butler.

Yours faithfully,

JOHN H. HARVEY

### DICTIONARY OF ENGLISH ARCHITECTS

SIR,—In the course of his review of Colvin's admirable *Dictionary of English Architects* published in the September issue, Mr. Christopher Gotch expresses the view that George Nicholson is incorrectly described there as having been architect to the Dean and Chapter of Durham, and that he was, in fact, a working mason. As extant information about George Nicholson is meagre, it would be helpful to know if Mr. Gotch has discovered some new source. Present sources seem adequate, however, to show that Colvin is substantially correct. Nicholson built the Prebends' Bridge, 1772–1777, and from about 1773 onwards was further entrusted by the Dean and Chapter with extensive repairs to the Cathedral, principally on the west and north fronts (not the north and east fronts as given by Colvin). The present parapets of the western towers, the upper parts of the north transept and the twin turrets of the north face of the Nine Altars are due to him, as well, probably, as the north porch and the tracery of the cloisters. These reparations cost nearly £30,000. Hutchinson, *History and Antiquities of Durham* (1787), writing whilst the work was in progress, published drawings of the north and east fronts made by Nicholson in 1780, and describes him there as 'architect'. Hutchinson also states that the Prebends' Bridge was erected 'at the expense of the dean and chapter, by Mr. Nicholson, their architect' (Vol. II, p. 317). Nicholson's term of office probably expired about 1795, for in that year a Mr. Morpeth appears as the chapter architect. In 1795, too, James Wyatt took over the external repairs and commenced remodelling the cathedral eastern front whilst preparing for the Dean and Chapter his scheme and report for drastic reforms of the fabric elsewhere. No substantiated claim has yet been advanced that the works carried out by Nicholson were designed by some other person.

Yours faithfully,

REGINALD A. CORDINGLEY [F]

\* August JOURNAL p. 422.

# Notes and Notices

## NOTICES

**Inaugural General Meeting. Tuesday, 1 November 1955, at 6 p.m.** The Inaugural General Meeting of the Session 1955-56 will be held on Tuesday 1 November 1955 at 6 p.m. for the following purposes:

To read the Minutes of the Ninth General Meeting of the Session 1954-55 held on 14 June 1955.

Mr. C. H. Aslin, C.B.E., President, to deliver his Inaugural Address.

To present the London Architecture Bronze Medal 1954 to Dr. J. L. Martin, M.A. [F], for the L.C.C. Ackroydon Estate, Wandsworth, S.W.

To present R.I.B.A. Awards for Distinction in Town Planning to Mr. A. G. Sheppard Fidler, M.A., A.M.T.P.I. [F] and Mr. Frederick Gibberd, C.B.E., M.T.P.I. [F].

(Light refreshments will be provided before the meeting.)

**Applications for the Fellowship.** As announced in the R.I.B.A. JOURNAL for May 1955, p. 280, a new procedure for considering applications for election to the Fellowship will come into force on 1 January 1956. From that date all candidates without exception will be required to submit to the Fellowship Examiners drawings and photographs or examples of work. They may also be required to attend for an interview, which may however be dispensed with at the discretion of the Fellowship Examiners.

Hitherto, Associates who have been principals in private practice for not less than seven successive years, and certain other Associates regarded as being in a position of equivalent responsibility, have been able to proceed to the Fellowship without the submission of drawings or examples of work. This concession terminates on 31 December 1955.

After that date the Fellowship Examiners will meet monthly to consider applications for the Fellowship. Any Associates applying will be required to submit to the Examiners for the approval of the Council working drawings and photographs of one or more of their executed buildings, which may be supplemented by original sketches or measured drawings of actual work. Applicants are requested to indicate on their drawings the date upon which they were prepared. The provisions at present in force for Licentiates applying for election to the Fellowship are not affected.

**Classes of Retired Members.** Under the provisions of Bye-law 15 applications may be received from those members who are eligible for transfer to the class of 'Retired Fellows', 'Retired Associates' or 'Retired Licentiates'.

The Bye-law is as follows: 'Any Fellow, Associate or Licentiate who has reached the age of 55 and has retired from practice may, subject to the approval of the Council, be transferred without election to the class of "Retired Fellows", "Retired Associates", or "Retired Licentiates", as the case may be, but in such case his interest in, or claim against the property of, the Royal Institute shall cease.

'The amount of the annual subscription payable by such "Retired Fellow", "Retired Associate" or "Retired Licentiate" shall be one guinea, or such amount as may be determined by resolution of the Council, excepting in the case of those who have paid subscriptions as full members for 30 years, and who shall be exempt from further payment. A "Retired Fellow", "Retired Associate" or "Retired Licentiate" shall have the right to use the affix of his class

with the word "Retired" after it, shall be entitled to receive the JOURNAL and Kalendar, shall be entitled to the use of the Library, and shall have the right to attend General Meetings, but shall not be entitled to vote. A "Retired Fellow", "Retired Associate" or "Retired Licentiate" shall not engage in any avocation which in the opinion of the Council is inconsistent with that of architecture. Nothing contained in this Bye-law shall affect the rights of persons who at the date of the passing of this Bye-law are members of the classes of "Retired Fellows" and "Retired Members of the Society of Architects".

**Correspondence with the Institute.** In order to facilitate speedier attention to correspondence, and to relieve the staff of a great deal of research, it is particularly requested that members and Students will kindly state in all correspondence with the Institute the class of membership (F, A, L or Student) to which they belong.

**Formal Admission of New Members at General Meetings.** New members will be asked to notify the Secretary R.I.B.A. beforehand of the date of the General Meeting at which they desire to be introduced and a printed postcard will be sent to each newly elected member for this purpose. On arrival at the R.I.B.A. on the evening of the General Meeting new members must notify the office of their presence and will then take their places in the seats specially numbered and reserved for their use. On being asked to present themselves for formal admission, the new members will file out in turn into the left-hand aisle and after shaking hands with the President (or Chairman) will return to their seats by way of the centre aisle.

Formal admission will take place at all future Ordinary General Meetings of the present Session, with the exception of the following:— 1 November 1955: Inaugural General Meeting. 7 February 1956: Presentation of Prizes. 10 April 1956: Presentation of Royal Gold Medal.

## CURRENT R.I.B.A. PUBLICATIONS

The following is a list of the main R.I.B.A. publications with their prices.

### Agreements, Forms of

Form of Agreement for General Use between a Private Building Owner and an Architect or a Firm of Architects.

Form of Agreement for General Use between a Building Owner (being a Statutory Authority) and an Architect or a Firm of Architects.

Form of Agreement between a Local Authority and a Firm of Architects for Housing Work.

Form of Agreement between a Local Authority and a Firm of Architects for Multi-Storey Flats.

Form of Agreement between the Promoters and a Firm of Architects appointed as the Result of a Competition.

Price 6d. per form (inclusive of purchase tax). Postage 3d.

### Architect and His Work, The

Price 6d. Postage 3d.

### Before You Build. Free.

## Certificates, Architects', Form Prepared by the Practice Committee

Copyright Book of 100 Certificates.

Price 17s. (inclusive of purchase tax). Postage 1s. 3d.

## Conditions of Engagement and Scale of Professional Charges

Price 6d. Postage 3d.

## Contract, Form of Agreement and Schedule of Conditions

For use with quantities: 1939 revised 1952. Copyright.

For use without quantities: 1939 revised 1952. Copyright.

Price 2s. 2d. per form (inclusive of purchase tax). Postage 3d.

Adapted for the use of Local Authorities, for use with quantities: 1939 revised 1952. Copyright.

Adapted for the use of Local Authorities, for use without quantities: 1939 revised 1952. Copyright.

Price 2s. 4½d. per form (inclusive of purchase tax). Postage 3d.

Fixed Fee Form of Prime Cost Contract for use in the repair of war-damaged property, 1946 revised 1955. Copyright.

Price 2s. 2d. (inclusive of purchase tax). Postage 3d.

Cost Plus Percentage Form of Prime Cost Contract for use in the repair of war-damaged property: 1946 revised 1955. Copyright.

Price 2s. 2d. (inclusive of purchase tax). Postage 3d.

**Examination, Intermediate, Questions Set At** Price 1s. per examination. Postage 3d.

**Examination, Professional Practice, Questions Set At**

Price 6d. Postage 3d.

**Examinations, Final and Special Final, Questions Set At**

Price 1s. per examination. Postage 3d.

## Forms of Articles of Pupilage

Copyright. Price 1s. 8d. (inclusive of purchase tax). Postage 3d.

## Membership of the R.I.B.A.

Particulars of the Qualifications for Association.

Price 2s. 6d. Postage 3d.

## Party Wall Notice Forms, for Use Under the London Building Act

Form A—Party Structure.

Form B—Party Fence Walls.

Form C—Intention to Build within Ten Feet and at a lower level than the bottom of the foundations of adjoining Owner's Building.

Form D—Intention to build within Twenty Feet of the adjoining Owner's Independent Building and to a depth as defined in Section 50 (1)(b).

Form E—Party Walls and Party Fence Walls on line of Junction of adjoining lands.

Form F—Walls or Fence Walls on Building Owner's land with footings and foundations projecting into adjoining Owner's land.

Form G—Selection of Third Surveyor.



Price 7d. per form (inclusive of purchase tax).  
Postage 3d.

#### Prizes and Studentships

Price 2s. 6d. Postage 3d.

## BOARD OF ARCHITECTURAL EDUCATION

**R.I.B.A. (Archibald Dawney) Scholarship Trust Prizes 1955-1956.** The R.I.B.A. (Archibald Dawney) Scholarship Trust Prizes for 1955-56 have been awarded as follows: a Prize of £60 to A. Cotterell of the Birmingham School of Architecture; a Prize of £60 to J. R. A. Wilson of the Architectural Association School of Architecture; a Prize of £60 to D. E. Thomas of the Liverpool School of Architecture, University of Liverpool; a renewal of the Prize of £60 awarded for the session 1954-55 to C. E. Hanley of the Birmingham School of Architecture.

## COMPETITIONS

**Manhattan Redevelopment: International Competition.** The publishers of *U.S.A. Tomorrow* invite architects, city planners, engineers and all others identified with these or allied professions to submit schemes for the redevelopment of the mid-town area of Manhattan. *There is no undertaking that any award-winning entry will be used.*

Assessors: Mr. Charles Abrams, Professor Percival Goodman, Mr. Jose Luis Sert, Mr. William W. Wurster, Mr. Maurice E. H. Rotival.

Premiums: \$5,000, \$2,500, \$1,500, \$1,000.

Last day for submitting schemes: 1 June 1956.

Conditions may be obtained on application to: 'U.S.A. Tomorrow', Manhattan Redevelopment Competition, 210 Fifth Avenue, New York 10, N.Y., U.S.A.

**New Offices, Enniskillen.** The Fermanagh County Council invite British architects to submit designs for new offices to be erected in Enniskillen, Northern Ireland, on a site adjoining the Courthouse.

Assessor: Mr. R. S. Wilshire, M.C., F.R.I.C.S. [F].

Premiums: £500, £200.

Last day for submitting designs: 4 p.m. 20 December 1955.

Conditions may be obtained on application to the Secretary, Fermanagh County Council, Enniskillen, Co. Fermanagh.

Deposit: £2 2s. 0d.

**A House for the Professional Man.** Messrs. Tretol Ltd. invite architects to submit designs in competition for 'a house for the professional man'.

*There is no undertaking that the house will be built.*

Assessor: Mr. Clifford Culpin [F].

Premiums: £250, £150, £100.

Last day for submitting designs: 3 p.m. 8 November 1955.

No questions will be answered.

Conditions may be obtained on application to Messrs. Tretol Ltd., Tretol House, The Hyde, London, N.W.9. Deposit: £1 1s. 0d. (cheques to be made out to Tretol House Competition).

**International Competition for a Monument in honour of Generalissimo Dr. Rafael Leonidas Trujillo Molina.** Notice has been received from

the Secretary General of the International Union of Architects of an architectural competition being promoted in the Republic of Dominica for the design of a monument commemorating Dr. Rafael Leonidas Trujillo Molina.

The conditions for this competition are at present not such as to conform to the Regulations for International Competitions in Architecture and Town Planning approved by the International Union, and members and Students R.I.B.A. are accordingly warned not to take part in this competition.

If, as a result of further negotiation, the conditions are amended to satisfy the requirements of the International Union, a further notice will be published.

## ALLIED SOCIETIES

### Changes of Officers and Addresses

**East Africa Institute of Architects.** President, A. D. Gaymer [A], P.O. Box 58, Nairobi, Kenya.

**Indian Institute of Architects.** President, Gajnan B. Mhatre [F], Prospect Chambers Annexe, Hornby Road, Fort, Bombay, India.

**Essex, Cambridgeshire and Hertfordshire Society of Architects.** Annual Dinner. The Essex, Cambridgeshire and Hertfordshire Society of Architects held their annual dinner at Trinity Hall, Cambridge, on Friday 23 September. Mr. C. I. Hobbs [A], President of the Society, was in the Chair. Mr. C. H. Aslin, C.B.E., President, R.I.B.A., who is a member of the Society, was present with Mrs. Aslin, and among the guests were the Mayor and Mayoress of Cambridge, the Chairman of the Cambridgeshire County Council, the Archdeacon of Ely and Mr. C. D. Spragg, C.B.E., Secretary R.I.B.A. Mrs. Hobbs was also present, and the Chairmen of the various Chapters of the Society.

Mr. Hobbs proposed the toast of the R.I.B.A. and the Allied Societies. He reviewed briefly the many aspects of modern architectural work and the importance of the architect's place in contemporary society. Mr. Aslin responded. Mr. P. Mauger, M.T.P.I. [F], proposed the toast of 'The Patrons of Architecture' and the Archdeacon of Ely, the Ven. H. F. Kirkpatrick, responding, spoke of the amicable relations existing between the Church and the architectural profession. Mr. Peter Bicknell [F] proposed the toast of 'Our Guests' and the Mayor of Cambridge replied.

Finally, Mr. Hobbs proposed a vote of thanks to the Master and Fellows of Trinity College for their courtesy in allowing the Hall to be used and to the kitchen staff for their co-operation.

## GENERAL NOTES

**Leeds School of Architecture. Past Students' Reunion.** A reunion of past students of the Leeds School of Architecture and Town Planning is being held at the Great Northern Hotel, Wellington Street, Leeds 1, on Saturday 29 October, at 7.30 p.m. Tickets are 10s. inclusive of running buffet, and past students are invited to bring one guest each. Dress is informal.

Those interested should contact Mr. A. V. Montague [A], Hon. Secretary of the Past Students' Association, at Bank Buildings, Hyde Park, Leeds 6 (Leeds 5-5382), also at James Street, Harrogate.

**Commonwealth Fund Fellowships.** The Commonwealth Fund of New York has announced its 1956 programme of Fellowships available to British subjects for study and travel in the United States. There are six categories of these Fellowships in all. Those most likely to be of interest to architects are the twenty General Fellowships offered to graduates of a university in the United Kingdom and two Fellowships in the scientific and professional grades of the Home Civil Service. There are also two Fellowships for civil servants in the Governments of British Colonies, Protectorates and Trust Territories. Closing dates for application, 15 and 10 December and 18 November respectively.

Full details can be obtained from The Warden, Harkness House, 35 Portman Square, London, W.1 (WELbeck 5223) or through any university or Government Department.

## Membership Lists

### ELECTION: 11 OCTOBER 1955

The following candidates for membership were elected on 11 October 1955.

#### AS FELLOWS (14)

Betts: Randolph Cotgrave, B.Arch. (McGill) [A 1929], Montreal, P.Q., Canada.  
Cole: Charles Alan Crozier [A 1936], Bath.  
Dadarkar: Ganpat Shrikishna [A 1934], Bombay, India.  
Davie: Eric Hill, A.M.T.P.I. [A 1940].  
Egan: Michael Henry, A.A.Dipl. [A 1940].  
Fielden: Frank, M.A. [A 1941], Newcastle upon Tyne.  
Kay: Harold Askew [A 1941], Stourbridge.  
Kwan: Wing Hong, A.A.Dipl. [A 1936], Hong Kong.  
Matthew: Robert Hogg, C.B.E., M.A. [A 1931], Edinburgh.  
Roberts: Frederick Charles, B.Arch. (L'pool) [A 1938], Mold.  
Wilson: William Gregory, B.Arch. (L'pool) [A 1937], Hull.  
Wood: Leslie Charles [A 1940].  
Woolley: Frederick Ernest [A 1933], Nottingham.

and the following Licentiate who has passed the qualifying examination:

Alexander: Maurice.

#### AS ASSOCIATES (114)

Abbott: Derek Anthony de-Greeff, A.A.Dipl., Liphook.  
Anderson: David Arthur Frederick, Southsea.  
Austin: Kenneth Vincent, Abingdon.  
Baldwin: Stanley Frank, Leigh-on-Sea.  
Barclay: David Nicol, B.A. (Cantab.) Dip.Arch. (Birm.), Cambridge.  
Barden: Geoffrey, B.Arch. (L'pool), Liverpool.  
Barratt: John Neville, Dip.Arch. (Birm.), Walsall.  
Barsby: Graham Anthony, Dipl.Arch. (Northern Polytechnic).  
Batchelor: David Gray, Dipl.Arch. (Northern Polytechnic).  
Ben-Attar: Jacob, Dip.Arch. (The Polytechnic).  
Blanchard: Bernard William, Willerby.  
Boatman: Colin Douglas, A.A.Dipl.  
Bonnick: John Harold, B.Arch. (Toronto), Toronto, Ontario, Canada.  
Booth: Michael George, A.A.Dipl., Winchester.  
Brown: Ian Clinton, Dipl.Arch. (Northern Polytechnic).  
Brown: Ian Gilbert, B.Arch. (Dunelm), Whitburn.  
Brown: Koppel, B.Arch. (C.T.), Kitwe, N. Rhodesia.

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Evamy: J  
Polytechn  
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Evans: P  
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Harris:  
Henders  
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Hill: Pe  
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Hodges:  
Jackson  
Denmar  
Jenkins:  
Johnston  
Kot: Jar  
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**Buchwald: Lucjan.**  
**Burford: Charles Henry.**  
**Burt: John Deaville,** Dipl.Arch. (Northern Polytechnic).  
**Caddy: Hubert Rowland,** Lewes.  
**Cartwright: Andrew St. George,** Cullion.  
**Chrystal: Alexander,** Bedford.  
**Cordingley: Lawrence Norton,** Dipl.Arch. (Leeds), Ilkley.  
**Coward: John Reynolds,** B.Arch. (L'pool), Ebbw Vale.  
**Crawforth: Colin Peter,** Hornsea.  
**Croft: David John Nash,** Dipl.Arch. (Northern Polytechnic), Watford.  
**Cross: David Wilson,** B.Arch. (L'pool), Norwich.  
**Crosse: Simon Courtenay.**  
**Cutlack: James Norman Hewett,** Dipl.Arch. (Northern Polytechnic).  
**Cutmore: Leslie Albert,** Dipl.Arch. (Northern Polytechnic).  
**Davidson: Ian Alexander,** D.A.(Edin.), Dingwall.  
**Dockeray: William Denne,** A.A.Dipl., Canterbury.  
**Doyle: Richard Thomas Wallace,** Dipl.Arch. (Northern Polytechnic), Rickmansworth.  
**Evamy: Michael Everett,** Dipl.Arch. (Northern Polytechnic).  
**Evans: Christopher Owen Rhys,** B.A.(Cantab.).  
**Evans: Peter Gwynne Ansdell,** B.Arch. (L'pool).  
**Falk: Brian Geoffrey,** A.A.Dipl.  
**Finlayson: Alexander,** D.A.(Dundee), Aberfeldy.  
**Fletcher: William Alfred,** Royston.  
**Galastegi: Lander,** B.Arch. (N.U.I., Dublin), Dublin.  
**Gardner: John Thomas.**  
**Gell: Eric,** Dipl.Arch. (Leeds), Bradford.  
**Gibbs: Peter Malcolm,** A.A.Dipl., Croydon.  
**Goldsmid: Ian Alexander,** Dipl.Arch. (Northern Polytechnic).  
**Greenbury: Stephen William,** Dipl.Arch. (Northern Polytechnic).  
**Grimwade: Nigel Ralph.**  
**Hall: James Barrie,** Dip.Arch. (Birm.), Birmingham.  
**Harris: John,** Southampton.  
**Henderson: Donald Robert,** Baghdad, Iraq.  
**Hepple: (Miss) Patricia Mary.**  
**Hill: Peter Edmund Benson,** Dipl.Arch. (Leeds), Ilkley.  
**Hodges: Raymond Allen,** Tunbridge Wells.  
**Jackson: Robert Best,** D.A.(Edin.), Aalborg, Denmark.  
**Jenkins: David Charles Henry,** Bournemouth.  
**Johnston: Thomas James,** Ipswich.  
**Kot: Jan,** Sheffield.  
**Kowalski: Szczepan Marian.**  
**Lack: Henry Chester,** B.Arch., Dip.Arch. (Melbourne).  
**Land: Peter David,** A.A.Dipl., Norwich.  
**Langlands: Iain Ralph,** Dipl.Arch. (Northern Polytechnic), Lewes.  
**Langlay-Smith: Gerald Michael,** D.A.(Edin.), Alfreton.  
**Lankey: Peter Grant.**  
**Legge: Hugh Roger,** Dip.Arch. (Abdn.), Aberdeen.  
**Lenon: (Mrs.) Jane Alethea,** Dipl.Arch. (Oxford).  
**Litchfield: Patrick,** Bournemouth.  
**Malnic: Sergei,** B.Arch. (Sydney), Sydney, New South Wales, Australia.  
**Mason: Richard Granville,** Dipl.Arch. (Northern Polytechnic), Ipswich.  
**Meager: Michael Anthony.**  
**Miller: William Alistair,** D.A.(Edin.), Ayr.  
**Milne: Peter,** Dipl.Arch. (Northern Polytechnic), Whyteleafe.  
**Morris: Francis Clement Morris,** Southampton.  
**Naudé: Schalk Vorster,** B.Arch. (C.T.), Cape Town, S. Africa.  
**Norwood: Gerald.**

**Onsley: Michael Crawley,** Dip.Arch. (Birm.), Stratford-upon-Avon.  
**Palmer: James Raymond Burkitt,** B.Arch. (L'pool), Kettering.  
**Pearce: Alan William,** Dipl.Arch. (Northern Polytechnic).  
**Penhey: Arthur David.**  
**Peters: Edward Charles,** B.Arch. (Sydney), Sydney, New South Wales, Australia.  
**Polson: Gordon Fairlie,** D.A. (Glas.), Toronto, Ontario, Canada.  
**Prendergast: Michael Denis,** B.A.(Arch.) (Manchester), Southampton.  
**Reid: Anthony John,** Dipl.Arch. (Northern Polytechnic).  
**Richards: Dennis Frederick.**  
**Ringrose: Leonard Horace Augustus,** Portsmouth.  
**Roberts: Robert Arthur,** M.C.D., B.Arch. (L'pool), Holyhead.  
**Ross: Archibald David Campbell,** B.A.(Cantab.).  
**Roxburgh: Robert Dart,** B.Arch. (Sydney), Albury, New South Wales, Australia.  
**Rutherford: Derek Alfred,** Dipl.Arch. (Northern Polytechnic), Orpington.  
**Schultz: Ronald,** Dipl.Arch. (Northern Polytechnic).  
**Sharp: John Vernon.**  
**Sharp: Kenneth,** Dip.Arch. (Manchester), Manchester.  
**Smith: Brian Edward,** Luton.  
**Smith: Peter Griggs,** A.A.Dipl.  
**Stableford: Charles Rodney,** A.A.Dipl.  
**Staniforth: Ralph,** Dip.Arch. (C.T.), Johannesburg, S. Africa.  
**Staniland: Richard Leslie,** Dip.Arch. (Sheffield), Doncaster.  
**Stephenson: Charles John,** Dip.Arch. (Manchester), Lancaster.  
**Swann: (Miss) Margaret Adie.**  
**Swann: Victor.**  
**Thompson: Alan Douglas,** Dip.Arch. (Manchester), Cleveleys.  
**Thomson: Keith,** Dip.Arch. (Manchester), Manchester.  
**Tolson: James Archer.**  
**Tompsett: Ralph Hugh,** Dipl.Arch. (Northern Polytechnic), Sidcup.  
**Turnbull: Peter Leslie,** Sutton.  
**Vasbenter: Albert Louis,** Ilford.  
**Waller: Paul William,** Dipl.Arch. (Northern Polytechnic), Tewin.  
**Watkins: (Miss) Judith.**  
**Weldon: Peter Dennis,** Dipl.Arch. (Northern Polytechnic), Bournemouth.  
**Williams: James Cronshaw,** Dip.Arch. (Sheffield), Rotherham.  
**Wilson: John Vincent,** M.C.D., B.Arch. (L'pool), Southampton.  
**Wimbleton: John Francis,** Tonbridge.  
**Wise: John Sturt,** B.Arch. (Rand), Florida, West Rand, S. Africa.  
**Wong: Edwin,** B.Arch. (Auck., N.Z.), Wellington, New Zealand.  
**Younger: Robert Paul,** A.A.Dipl.

#### AS LICENTIATES (6)

**Agas: Jamshed Burjor,** Bombay, India.  
**Cunningham: Joseph,** Birmingham.  
**Hearn: Wilfred Roy Edmund,** Birmingham.  
**Hooper: Victor Claude,** Exeter.  
**Kelf: Jasper Lakeman.**  
**Smith: Captain Edgar Harry,** Wallington.

#### ELECTION: 6 DECEMBER 1955

An election of candidates for membership will take place on 6 December 1955. The names and addresses of the candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Monday 31 October 1955.

The names following the applicant's address are those of his proposers.

#### AS HON. CORRESPONDING MEMBERS (2)

**Ditchy: Clair William,** Past President of the American Institute of Architects; Honorary Fellow of the Royal Architectural Institute of Canada; Corresponding Member of the Philippine Institute of Architects, 1630 Houstonia, Royal Oak, Michigan, U.S.A. Proposed by the Council.

**Purves: Edmund Randolph,** Executive Director of the American Institute of Architects, 3410 Volta Pl., N.W., Washington 7, D.C., U.S.A. Proposed by the Council.

#### AS FELLOWS (41)

**Alexander: Richard Rennie,** Dip.Arch.(Abdn). M.T.P.I. [A. 1926], City Architect, Stamp End, Lincoln; 73 Yarrowood Crescent, Lincoln.  
**R. E. M. Coombes, L. C. Howitt, J. W. H. Barnes.**

**Bennett: Philip Hugh Penberthy,** M.A.(Cantab.) [A. 1948], 43 Bloomsbury Square, W.C.1; 7 Park Village West, Regent's Park, N.W.1.  
**Sir Thomas Bennett, Sydney Tatchell, Victor Heal.**

**Bolton: Thomas Porteous,** B.Arch., Dip.C.D. (L'pool), A.M.T.P.I. [A 1936], 13 High Street, Wendover, Aylesbury, Bucks; Whitelates, Ellesborough Road, Wendover. W. D. Hartley, E. D. J. Mathews, F. H. Crossley.

**Campbell: Alexander Buchanan,** D.A.(Glas.) [A 1937], 128 Elderslie Street, Glasgow, C.3; 26 Station Road, Bearsden. J. A. Coia, N. R. J. Johnston, F. R. Wylie.

**Clarke: Albert Harry,** A.M.T.P.I. [A. 1940], Chief Assistant Architect, City Architect's Department, Bristol; 'Brae', Over Road, Almondsbury, near Bristol. J. N. Meredith, J. R. Edwards, E. H. Button.

**Collis: Russell Edwin** [A 1942], Station Road, Beccles, Suffolk; White Cottage, Walberswick, Southwold, Suffolk. Sidney Loweth, D. J. Green, F. H. Swindells.

**Crallan: Hugh Parnell,** M.A.(Oxon.), A.A. Dipl. [A 1935], 11 Bladud Buildings, Bath; Tivoli House, Greenway Lane, Bath. V. O. Rees, T. W. Snailum, H. D. Roberts.

**Cubitt: James William Archibald,** M.B.E., B.A.(Oxon.) [A 1940], 25 Gloucester Place, W.1; 42 York Terrace, Regent's Park, N.W.1.  
**Richard Sheppard, Sir Hugh Casson, E. M. Fry.**

**Donati: Edward** [A 1937], 13 The Parade, Minehead, Somerset; Whitegate Road, Minehead. W. R. Cooper, R. G. Nicholls, C. G. Toy.

**Eaton: Thomas Albert** [A 1942], Messrs. Farmer and Dark, Romney House, Tufton Street, Westminster, S.W.1; 6 Ellesmere Close, Wanstead, E.11. Frankland Dark, R. L. Banks, Clifford Culpin.

**Findlater: George Robertson** [A 1947], 9 The Esplanade, Sunderland; 1 The Close, Whitburn, Co. Durham. S. W. Milburn, W. E. Dow, G. T. Brown.

**Garrett: Rodney Colston** [A 1947], 5 Ship Street, Brighton, Sussex; 'Little Copse', Clayton Avenue, Hassocks, Sussex. K. E. Black, S. H. Tiltman, F. F. Howard.

**Herz: Rudolf, Dr. Ing.** (Berlin) [A 1952], Hammersmith School of Building, Lime Grove, W.12; 95 Ashbourne Road, Mitcham, Surrey. Arthur Korn, Edwin Rice, Henry Elder.

**Howarth: Thomas,** Ph.D.(Glasgow) [A 1940], 1 Didsbury Park, Manchester 20. Prof. R. A. Cordingley, E. S. Benson, Prof. Clifford Holliday.

**Hubbard: Robert Pearce Steel, B.Arch.(L'pool)** [A 1934], 2 Lord North Street, Westminster, S.W.1; 30 The Grove, Hampstead, N.W.3. A. St. B. Harrison, Prof. Sir Patrick Abercrombie, Prof. Sir William Holford.

**Jaques: Richard, J.P.** [A 1910], 3 Carr Road, Nelson, Lancs.; 'Starbotton', Carr Hall Road, Nelson. Applying for nomination by the Council under Bye-law 3(d).

**Johnson: Edward Austen, Dipl.Arch.(Leeds)** [A 1945], 17 and 18 King's Head Buildings, Cloth Hall Street, Huddersfield; 18 Occupation Road, Lindley, Huddersfield. Norman Culley, C. Hickson, N. S. Lunn.

**Knapton: Alan Derek, A.M.T.P.I.** [A 1946], 123-4 Newgate Street, E.C.1; 45 Hillside Avenue, Worthing, Sussex. P. K. Hanton, B. W. L. Gallannaugh, H. A. Mealand.

**Lowe: Cecil William** [A 1940], Messrs. Kennard and Lowe, 19-20 Railway Approach, Birmingham, 16. S. E. 1; 'White Poplars', Lubbock Road, Chislehurst, Kent. Laurence Kennard, G. C. Lowe, Cecil Kennard.

**Macdonald: Hugh Sinclair, D.A.(Edin.)** [A 1930], 18 Princes Street, Thurso, Caithness; Hillcroft, Princes Street, Thurso. W. H. Kininmonth, J. R. McKay, Alexander Cullen.

**McLauchlan: Stewart Farrington, Dipl.Arch.(L'pool)** [A 1946], 349 Royal Liver Building, Liverpool, 3; Dorney Cottage, Wittering Lane, Hestwall, Wirral. H. A. Dod, Bertram Ashworth, W. H. G. Dobie.

**Neale: Peter Walter James, M.C.** [A 1947], 224 Hagley Road, Edgbaston, Birmingham, 16. S. T. Walker, A. H. Gardner, D. A. Goldfinch.

**Noble: John Baillie** [A 1936], 10 Thorpe Road, Norwich, Norfolk; 54 Intwood Road, Cringleford, Norwich. A. G. Berry, S. J. Wearing, E. R. Crane.

**Plant: Walter Geoffrey, Dipl.Arch.(L'pool)** [A 1929], North-East Metropolitan Regional Hospital Board, 11a Portland Place, W.1; 53 Green Curve, Banstead, Surrey. P. G. Freeman, Denis Poulton, William Crabtree.

**Priestman: Harold Dent** [A 1936], 101 Spring Bank, Hull, Yorks.; 'Lyndhurst', Eastgate, Hornsea, E. Yorks. F. J. Horth, W. B. Wheatley, H. Andrew.

**Pym: John, M.A.(Cantab.), A.A.Dipl., A.M.T.P.I.** [A 1934], 5 Victoria Street, Westminster, S.W.1; 14 North Hill, Highgate, N.6. Major H. Oliver, Sir Edward Maufe, A. L. Osborne.

**Rider: Norman Terence** [A 1939], 224 Hagley Road, Edgbaston, Birmingham, 16; 20 Paradise Lane, Hall Green, Birmingham, 28. G. B. Drury, S. T. Walker, A. H. Gardner.

**Robb: George Clark, A.M.T.P.I.** [A 1940], Department of Health for Scotland, 42 Union Street, Inverness; 'Sandria', The Ness, Fortrose, Ross-shire. Alexander Cullen, J. Blackburn, R. Carruthers-Ballantyne.

**Royce: Norman Alexander** [A 1940], 3 Field Court, Grays Inn, W.C.1; 78 Kenwood Drive, Beckenham, Kent. G. E. Bright, K. M. Winch, H. C. Wilkerson.

**Sutcliffe: Tom Allison** [A 1944], 47 Whitehall, Westminster, S.W.1; Zitta Cottage, 2 Hadley Highstone, Barnet, Herts. Harold Bailly, Harry Holland, P. V. Mauger.

**Tetlow: John Dawe, B.Arch.(L'pool), Dip.T.P. (The Polytechnic), M.T.P.I.** [A 1938], Bank Chambers, 1 The Friary, Lichfield, Staffs.; 31 Townfields, Lichfield. G. A. G. Miller, S. L. G. Beaufoy, A. C. H. Stillman.

**Townsend: Douglas Charles** [A 1936], Messrs. Grimshaw and Townsend, 24 Willow Street,

Accrington; 'Stoops Farm', Whalley Road, Great Harwood, near Blackburn. H. T. Seward, P. G. Fairhurst, Francis Jones.

**Watson: Kenneth James Victor** [A 1947], 8 The Town, Enfield, Middlesex; 25 Private Road, Enfield. E. W. Palmer, T. E. Scott, C. W. Reeves.

**Whiting: Basil Thorp** [A 1938], 1 Fox Hill, Selly Oak, Birmingham, 29. S. T. Walker, D. A. Lumsden, Basil Spence.

**Williams: Richard Allport, M.B.E., B.Arch.(L'pool)** [A 1931], Deputy County Architect, Lancashire County Council, P.O. Box 26, County Hall, Preston, Lancs.; Alston Hey, Alston Lane, Longridge, near Preston. H. Haughan, G. N. Hill, C. B. Martindale.

**Wingate: Wilfrid Hurford** [A 1930], Shire Hall, Cambridge; 43 Sedley Taylor Road, Cambridge. D. W. Roberts, H. C. Hughes, Peter Bicknell.

**Young: John Samuel Auckland, B.A.(Arch.) (Manchester)** [A 1941], Messrs. Young and Purves, 12 St. Anns Square, Manchester, 2; Moresby, Prestwich Park South, Prestwich, Manchester. P. G. Fairhurst, J. P. Nunn, Prof. R. A. Cordingley.

and the following Licentiate who have passed the qualifying examination:

**Bruce: Robert Malcolm, 44A Hall Gate, Doncaster, Yorks.; 15 Broughton Road, Bessacarr, Doncaster.** Hugh Smith, J. A. Dempster, A. F. French.

**Strahan: Francis Charles, 9 St. Thomas Street, London Bridge, S.E.1; 18 Milne Feild, Hatch End, Middlesex.** Prof. A. E. Richardson, E. A. S. Houfe, I. G. Smith.

**Wilkinson: Arthur, 8 City Road, Finsbury Square, E.C.1; 11 Totnes Walk, N.2. L. M. Gotch, Lord Mottistone, S. B. Caulfield.**

and the following Licentiate who is qualified under the provisions of Section IV, Clause 4 (c) (ii) of the Supplemental Charter of 1925:

**Robertson: Robert Malcolm, North House, 17 North John Street, Liverpool, 2; Flat 2, Coronation Buildings, Coronation Walk, Southport, Lancs.** Sir Alfred Shennan, Dr. Ronald Bradbury, R. A. Threadgold.

#### AS ASSOCIATES (53)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

**Anderson: John, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 'Dunure', Upper Princes Street, Ballymena, Co. Antrim, N. Ireland.** J. R. McKay, I. G. Lindsay, T. W. Marwick.

**Annable: Brian, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 124 Unthank Road, Norwich, Norfolk.** L. G. Hannaford and the President and the Hon. Secretary of the Norfolk and Norwich Association of Architects under Bye-law 3(a).

**Arnell: Kenneth, D.A.(Glas.) (Glasgow Sch. of Arch.), c/o Gillespie, 264 Bath Street, Glasgow, C.2.** Prof. W. J. Smith, William McCrea, J. A. Coia.

**Blackmore: David Anthony, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 54 Highfield Avenue, Meir, Stoke-on-Trent.** Prof. Stephen Welsh, H. B. Leighton, H. B. S. Gibbs.

**Brooks: Albert John, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 41 Grange Drive, Glenhills, Blaby, Nr. Leicester.** F. Chippindale, Joseph Emberton, S. Penn Smith.

**Cameron: John James Amphlet (Special Final)** 14 Hallam Gardens, Hatch End, Middlesex. A. G. Alexander, E. H. Banks, C. V. Ponder.

**Child: Edmund Henry George (Special Final)** 192 Walton Road, East Molesey, Surrey. Applying for nomination by the Council under Bye-law 3(d).

**Clarke: Kenneth John, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 9A Northfield Road, Peterborough, Northants.** S. Penn Smith, G. A. Cope, T. W. Haird.

**Cook: Ian Gordon, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Ross Cottage, Nayland, Suffolk.** Donald Jack, A. C. S. Auld, T. W. Marwick.

**Cooper: John Leslie, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Shaun, Drumburgh, Nr. Carlisle.** J. H. Haughan, C. B. Martindale, Stephen Mann.

**Crook: Norman Clifton (Final), 40 Stanley Avenue North, Prestwich, Lancs.** W. C. Young, H. T. Seward, Francis Jones.

**Fairhurst: Ian Garland, M.A.(Cantab.), Dip.Arch. (Manchester) (Victoria Univ., Manchester: Sch. of Arch.), c/o Messrs. Harry S. Fairhurst & Son, 55 Brown Street, Manchester, 2.** Francis Jones, F. L. Halliday, P. G. Fairhurst.

**Forbes: Andrew Edmond, Dip.Arch.(Abdn.) (Aberdeen Sch. of Arch.: Robert Gordon's Tech. Coll.), 40 Malvern Avenue, Flixton, Manchester.** E. F. Davies, J. G. Marr, T. L. Viney.

**Foster: Gordon Horace, Dip.Arch.(Birm.) (Birmingham Sch. of Arch.), Flat 86, Ablewell Road, Walsall.** A. Douglas Jones, T. M. Ashford, T. H. Jones.

**Frost: Arnold, Dip.Arch.(Manchester) (Victoria Univ., Manchester: Sch. of Arch.), 1 Gawsworth Avenue, East Didsbury, Manchester, 20.** Prof. R. A. Cordingley, Dr. W. A. Singleton, E. S. Benson.

**Goodall: Francis Richard Cruice, B.A.(Cantab.) (Arch. Assoc. (London): Sch. of Arch.), 28 The Little Boltons, S.W.10.** Gordon Leith and applying for nomination by the Council under Bye-law 3(d).

**Henry: Kenneth Frank, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 265 Ferndale Road, Swindon, Wilts.** S. Penn Smith, Major A. D. Kirby, R. E. E. Beswick. **Jones: Gwyn Achille, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 6 Kirby Road, Leicester.** S. Penn Smith, T. W. Haird, T. A. Collins.

**Jordan: Leslie (Final), 36 Morley Road, Chaddesden, Nr. Derby.** F. H. Crossley, E. H. Ashburner, D. Wynne-Thomas.

**Lancaster: Frank Hargreaves (Special Final)** 8 Tower Place, York. E. Firth, G. G. Pace, A. N. Thorpe.

**McNab: Archibald Campbell, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 3 Kingsknowe Crescent, Edinburgh, 11.** Applying for nomination by the Council under Bye-law 3(d).

**Merrick: Basil, Dip.Arch.(Birm.) (Birmingham Sch. of Arch.), Messrs. W. Dobson Chapman and Partners, 3 St. James's Square, Manchester.** A. Douglas Jones, T. M. Ashford, Arthur Clayton.

**Mitchell: Michael Marr, Dip.Arch.(Abdn.) (Aberdeen Sch. of Arch.: Robert Gordon's Tech. Coll.), 102 Broomhill Road, Aberdeen.** E. F. Davies, J. G. Marr, A. G. R. Mackenzie.

**Morris: James Shepherd, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 20 God**

Avenue, Edinburgh, 7. J. R. McKay, W. H. Kininmonth, L. G. MacDougall.

**Mutton: Ronald William**, Dip.Arch. (The Polytechnic) (The Poly., Regent Street, London: Sch. of Arch.), 229 Orchard Way, Beckenham, Kent. J. S. Walkden, J. H. Alleyn, Dr. J. L. Martin.

**Nairn: Douglas Gordon**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 33 Cluny Gardens, Edinburgh, 10. W. H. Kininmonth, Frank Wood, J. R. McKee.

**Norris: Ronald Derek**, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), Home Farm, Bibury, Cirencester, Gloucestershire. K. B. Mackenzie, S. Penn Smith, G. A. Cope.

**O'Brien: Patrick**, B.Arch. (N.U.I., Dublin) (Univ. Coll., Dublin, Ireland: Sch. of Arch.), 3, Lower Kilmacud Road, Stillorgan, Co. Dublin. Prof. J. V. Downes and applying for nomination by the Council under Bye-law 3(d).

**Owen: John Leslie** (Special Final), 'Windyridge', Northwood Lane, Clayton, Newcastle under Lyme, Staffs. J. R. Piggott, C. Knapper, J. A. Pickavance.

**Patel: Suryakant**, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 10 Rosecroft Avenue, N.W.3. S. Penn Smith, R. W. H. Jones, R. R. Grant.

**Prizeman: John Brewster**, A.A.Dipl. (Arch. Assoc.(London): Sch. of Arch.), 73 Whiteknights Road, Reading, Berks. C. H. Stableford, O. Singer, Arthur Korn.

**Reeby: John Francis**, A.A.Dipl. (Arch. Assoc.(London): Sch. of Arch.), 54 Thistlebarrow Road, Salisbury, Wiltshire. Arthur Korn, James Melvin, Frank Rutter.

**Ridge: Richard Martin**, B.Arch.(Dunelm) (King's Coll. (Univ. of Durham), Newcastle upon Tyne: Sch. of Arch.), 4 Swindon Street, Hebburn, Co. Durham. Prof. W. B. Edwards, Bruce Allsopp, J. H. Napper.

**Ruffell: Alexander**, D.A.(Glas.) (Glasgow Sch. of Arch.), 'Dovehill', 10 Lovedale Crescent, Balerno, Midlothian, Scotland. Prof. W. J. Smith, Sir Charles Mole, C. G. Mant.

**Russell: Arthur John**, B.Arch.(L'pool) (Liverpool Sch. of Arch.: Univ. of Liverpool), Hillcrest, Mill Hill Road, Hinckley, Leics. Prof. R. Gardner-Medwin, Prof. L. B. Budden, R. R. Young.

**Sanguinetti: Mario Leopoldo**, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 168 Ladbroke Grove, W.10. A. L. Dotto, R. G. Covell, F. Chippindale.

**Sierakowski: Kazimierz** (Final), 30 Heath Rise, Bromley, Kent. Thomas Ritchie, F. G. Goodin, Z. Sirotkin.

**Skelton: (Miss) Margaret** (Final), Dormy, Brook Lane, Haywards Heath, Sussex. Prof. W. B. Edwards, Prof. J. S. Allen, J. H. Napper.

**Sketchley: Norman George**, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 39 Wanlip Avenue, Birstall, Nr. Leicester. S. Penn Smith, G. A. Cope, T. W. Haird.

**Smith: Alistair MacLachlan**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 2 Culcabock Road, Inverness. Alexander Cullen, J. Blackburn, R. Carruthers-Ballantyne.

**Smith: Anthony Vernon**, Dip.Arch.(Sheffield) (Univ. of Sheffield: Dept. of Arch.), 15 Grove Road, Totley Rise, Sheffield. Prof. Stephen Welsh, H. B. Leighton, W. L. Clunie.

**Snellgrove: John Albert** (Final), 9 Kynaston Road, Enfield, Middlesex. J. T. W. Peat and applying for nomination by the Council under Bye-law 3(d).

**Steedman: Robert Russell**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Spinakers, Dartford Road, Sevenoaks, Kent. L. G. MacDougall, J. R. McKay, W. H. Kininmonth.

**Steel: Andrew Forrest**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 'Benston', 10 Carrick Avenue, Ayr, Scotland. J. R. McKay, I. G. Lindsay, W. H. Kininmonth.

**Stockdale: Michael Charles** (Final), 10 Sevenoaks Avenue, Derby, T. W. East, E. H. Ashburner, D. Wynne-Thomas.

**Storey: Kenneth**, Dip.Arch.(Sheffield) (Univ. of Sheffield: Dept. of Arch.), 83 Somerset Road, Doncaster. H. A. Johnson, Prof. Stephen Welsh, H. B. Leighton.

**Tate: John Ramon**, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech.: Sch. of Arch.), 6 Holbrook Road, Leicester. S. Penn Smith, T. W. Haird, M. W. Pike.

**Thompson: Laurance Geoffrey Duffield**, D.A. (Edin.) (Edinburgh Coll. of Art: Sch. of Arch.) c/o M. Davison, Esq., 26 Main Street, Larne, Co. Antrim, N. Ireland. G. W. Robertson, A. F. Lucy, R. H. Gibson.

**Walker: Frederick Harold Harper** (Final), 4 Nelson House, Fisherton Street, Salisbury, Wiltshire. C. F. W. Haseldene, D. Wynne-Thomas, W. A. Woodland.

**Ward: Leonard** (Special Final), 'Stranraer', Flemming Crescent, Leigh-on-Sea, Essex. C. G. Mant, A. C. Hopkinson, E. H. Banks.

**Weedon: (Miss) Ann Elizabeth**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Green Bank, Tutbury, Staffordshire. Basil Spence, F. H. Crossley, A. G. Shoosmith.

**Williams: James Charles**, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Minster, Whitefield Hill, Kearsney, Dover. Basil Spence, H. W. Weedon, W. R. H. Gardner.

**Wilson: John Oxley** (Special Final), Romney House, Marsh, Pudsey, Nr. Leeds. R. H. Winder, N. H. Fowler, D. G. Millett.

#### ELECTION: 7 FEBRUARY 1956

An election of candidates for membership will take place on 7 February 1956. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday 14 January 1956.

The names following the applicant's address are those of his proposers.

#### AS FELLOWS (7)

**Brown: Henry Faulkner**, M.C. [A 1947], 15 St. Mary Street, Toronto 5, Canada; 15 Marchwood Drive, Toronto, W.4. H. L. Allward, R. S. Morris, Forsy Page.

**Lawson: Peter Dunbar**, D.A., Dip.T.P.(Edin.), A.M.T.P.I., Public Works Department, Lusaka, Northern Rhodesia; 32 Cecil Rhodes Drive, Lusaka. A. L. Spencer, Clifford Duke, G. A. Jellicoe.

**Little: Robert Lindsay** [A 1937], 321 Pitt Street, Sydney, N.S.W., Australia; 141 Pentecost Highway, Turramurra, N.S.W. W. R. Laurie, Samuel Lipson, F. W. Turner.

**Mistri: Minocher Pirozshaw** [A 1941], 11 Essaji Ebrahimi Building, Bunder Road, Karachi, Pakistan; 6 Rewa Mansion, Frere Road, Karachi. B. S. J. Aga, Prof. Claude Batley, C. M. Master.

**Sandbrook: Kenneth James** [A 1940], Royal Bank Chambers, 615 Columbia Street, New Westminster, B.C., Canada; 338 First Street, New Westminster. J. H. Wade, J. R. Smith, A. J. Hazelgrove.

**Smith: Meredith Saphir** [A 1928], Government Architect's Branch, Department of Public Works, Sydney, N.S.W., Australia; 19 Carrington Avenue, Mosman, N.S.W. Cobden Parkes, B. J. Waterhouse, Prof. Leslie Wilkinson.

**Terry: John Ernest Christopher**, A.A.Dipl. [A 1947], Messrs. John Terry and Graeme Black, 15 The Mall, Rawalpindi, Pakistan; The Guest House, Bachan Niwas, Napier Road, Rawalpindi. Walter George, O. Singer, C. L. Morris.

#### AS ASSOCIATES (16)

**Blackhurst: David Brian**, Dip.Arch.(Manchester) (Victoria Univ., Manchester: Sch. of Arch.), Architectural Branch, E.A.P.E.T. Admin., P.O. Box 2016, Nairobi, Kenya, E. Africa. Prof. R. A. Cordingley, H. D. Archer, Dr. W. A. Singleton.

**Chen: William Chong-Wah**, B.Arch.(Melbourne) (Passed a qualifying Exam. approved by the R.A.I.A.), 28 Gilstead Road, Singapore, Malaya. Prof. B. B. Lewis, Mrs. Hilary Lewis, R. G. Parker.

**Craig-McFeely: Kevin Francis**, M.C.D., B.Arch. (L'pool) (Liverpool Sch. of Arch.: Univ. of Liverpool), P.O. Box 651, Nairobi, Kenya, E. Africa. H. T. Dyer, Mrs. E. D. Hughes, G. B. E. Norburn.

**Fairbrother: Richard Morris**, A.A.P.T.C. (Passed a qualifying Exam. approved by the R.A.I.A.), Flat 208, 138 Adelaide Terrace, Perth, Western Australia. R. Summerhayes, K. C. Duncan, F. G. B. Hawkins.

**Griffin: Brian Carlton**, B.Arch.(Sydney) (Passed a qualifying Exam. by the R.A.I.A.), c/o Department of Works, Port Moresby, Papua. Prof. H. I. Ashworth, E. L. Thompson, Prof. Denis Winston.

**Hackett: Brian Henry**, Dip.Arch.(Queensland, (Passed a qualifying Exam. approved by the R.A.I.A.), Honour Avenue, Chelmer, Brisbane, Queensland, Australia. Prof. R. P. Cummings, E. J. A. Weller, H. M. Cook.

**Hale: Philip Wilfrid** (Final), 12 Galle Face Court 2, Colombo 3, Ceylon. G. A. Crockett, H. E. Gonsal, H. F. Billimoria.

**Hallier: Cyril Lorraine** (Passed a qualifying Exam. approved by the I.S.A.A.), 15 8th Avenue, Highlands North Extension, Johannesburg, S. Africa. F. O. Eaton and applying for nomination by the Council under Bye-law 3(d).

**Khambatta: Rusi Sorabji** (Final), The Rest House, Port Directorate, Basrah, Iraq. Max Lock and applying for nomination by the Council under Bye-law 3(d).

**Kok: Hermanus Jacobus** (Passed a qualifying Exam. approved by the I.S.A.A.), c/o Messrs. J. M. Wilson, H. C. Mason and Partners, P.O. Box 1222, General Post Office, Steamer Point, Aden, Southern Arabia. H. C. Mason and applying for nomination by the Council under Bye-law 3(d).

**Lim: Han Cheng**, B.Arch.(Melbourne) (Passed a qualifying Exam. approved by the R.A.I.A.), c/o E. J. Seow, Esq., 45 Bank of China Building, Battery Road, Singapore, Malaya. Prof. B. B. Lewis, W. I. Watson, K. A. Brundle.

**Loo: Kington**, B.Arch.(Melbourne) (Passed a qualifying Exam. approved by the R.A.I.A.), 17 Galloway Road, Kuala Lumpur, Malaya. K. S. Ng, T. A. L. Concannon, Prof. B. B. Lewis.



**Serfontein:** Willem Andries, B.Arch.(Rand.) (Passed a qualifying Exam. approved by the I.S.A.A.), 215 K.G.I. Building, Cross Street, Kroonstad, S. Africa. Applying for nomination by the Council under Bye-law 3(d).

**Standen:** David Herbert, B.Arch.(Sydney) (Passed a qualifying Exam. approved by the R.A.I.A.), c/o 14 Rokeby Road, Abbotsford Point, Sydney, N.S.W., Australia. Prof. H. I. Ashworth, E. L. Thompson, Prof. Denis Winston.

**Stewart:** James Rutherford (Passed a qualifying Exam. approved by the N.Z.I.A.), 205 South British Building, Shortland Street, Auckland, C.1, New Zealand. H. L. Massey, C. R. Ford, W. H. Gummer.

**Tonge:** (Miss) Jean Margaret (Final), 358 Markham Street, Toronto 4, Ontario, Canada. H. T. Cadbury-Brown, A. R. F. Anderson, L. M. Austin.

## Members' Column

*This column is reserved for notices of changes of address, partnership and partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.*

### APPOINTMENTS

**Miss Nadine Beddington** [A] has taken up an appointment as Advisory Architect to Messrs. Freeman Hardy and Willis Ltd. and will be glad to receive trade literature at 68 Mount Street, London, W.1 (GROsvenor 7211).

**Mr. C. J. Birtles** [A] has recently been appointed to the staff of the School of Architecture, University of Nebraska, Lincoln, Nebraska, U.S.A., where he will be pleased to receive trade catalogues.

**Mr. Geoffrey W. Dixon** [A] has been appointed Chief Architect at Harwell Atomic Energy Research Establishment, Harwell, nr. Didcot, Berks., where he will be pleased to receive trade catalogues, etc.

**Mr. John J. Gill** [A] has been appointed Company Architect to the Unbrako Socket Screw Co. Ltd., Burnaby Road, Coventry, and will be glad to receive trade catalogues, etc., c/o the Company.

On 6 January 1956 **Mr. George R. E. Griffin** [A] takes up the post of Senior Lecturer in Building, Kumasi College of Technology, Gold Coast. Trade catalogues will be welcomed at this address.

**Mr. Brian Hogan** [A] has taken up an appointment with the Public Works Department, Kuwait, Arabian Gulf, where he will be pleased to receive trade catalogues, etc., concerning building in the tropics.

**Mr. P. R. Prop** [A] has resigned his post as Chief Architectural Assistant with the Dagenham Borough Council and has taken up an appointment as Architect Grade I with the National Coal Board, East Midlands Division, Nottingham.

**Mr. John S. Rank** [A] has been appointed Borough Architect of Stockport and his address is Town Hall, Stockport, Cheshire.

### PRACTICES AND PARTNERSHIPS

The partnership between Architects' Co-partnership and Mr. W. J. G. Godwin [A], who has been responsible for the Lagos practice, has been dissolved by mutual consent. Architects' Co-partnership will continue to practise from

1 Regis Aine Street, Lagos, Nigeria (private mail bag 2115).

**Mr. Eric W. Hall** [A] has begun practice at Rock House, Calton Hill, Edinburgh (Waverley 7962).

**Mr. Marshall Harvey** [L] is returning to his late father's practice at 36 Station Street, Sittingbourne, Kent (Sittingbourne 139).

**Mr. Frank Hoar**, A.M.T.P.I. [F], ('Acanthus'), is practising in London at 1A Berners Street, W.1 (LANgham 8357).

**Mr. G. A. Jellicoe** [F] has taken into partnership Messrs. Alan Ballantyne [A], F. S. Coleridge, D.S.C. [A], and James Dartford [A]. In future the firm will be known as G. A. Jellicoe & Partners.

**Mr. W. L. Jones** [L] has taken into partnership his son Mr. D. J. Jones and Mr. J. C. Howlett [A] in connection with his London practice. The London address has been changed to 26 Charing Cross Road, W.C.2 (COVent Garden 1702).

**Mr. Douglas Nightingale** [F] and **Mr. Eric S. Ambrose** [F] have dissolved partnership. The practice of Nightingale and Ambrose at 27 John Adam Street, W.C.2, will continue under the direction of Mr. Nightingale. Mr. Ambrose has opened an office at 55 Pall Mall, S.W.1, where he will work in association with C. J. Epril & Partners [F/A].

**Mr. Robert W. K. C. Rogerson** [A] has begun practice at 121 Bath Street, Glasgow, C.2, and will welcome trade catalogues and samples.

**Mr. W. A. Ross**, C.B.E. [F], has by mutual agreement with Messrs. Ernest J. Thomas, Jolly and Grant, of 26 Kent Road, Southsea, Hants., ceased to be their London associate and is now practising at 5 The Garth, Holden Road, London, N.12.

**Mr. G. Felix Wilson** [L] has taken into partnership Mr. G. M. Crockett [A] and the practice will continue at 4 Russell Gardens, Kensington, W.14, under the style of Felix Wilson and Partners.

### CHANGES OF ADDRESS

**Mr. B. J. R. Anderson** [A] has changed his address to 162 Wintersdale Road, Leicester.

**Mr. Frank Andrews** [L] has transferred his Ringwood office from 45 High Street to 58 Southampton Road (Ringwood 588 as before).

**Messrs. C. A. Bransgrove and Partner** [A/A] of Dar es Salaam, Tanganyika, have opened an office in Kampala, Uganda. Their address is c/o P.O. Box 922, Kampala, Uganda, where they will be pleased to receive trade enquiries and catalogues.

**Mr. G. S. Bridgman** [F] has changed his address to Vicarage Flat, Christchurch Lane, Lichfield, Staffs., and is no longer associated with Smith's Building Systems (Birmingham) Ltd.

**Mr. W. H. Groves**, A.M.T.P.I. [A], has moved to 1 Kingsley Close, Stafford (Stafford 2664) and will welcome trade catalogues at this address.

The address of **Mr. F. W. Holder** [F], Chief Architect, Ministry of Agriculture, Fisheries and Food, is now Great Westminster House, Horseferry Road, S.W.1 (VICTORIA 8511, Ext. 485).

**Mr. H. G. Hunt** [A] has transferred his office to The Ingles, Hawkhurst, Kent.

**Mr. H. Reginald Hyne** [A] has moved to Horton Cottage, Datchet, Bucks. (Datchet 12).

**Mr. J. H. Ingham** [A] has changed his private address to 37 Hadlow Road, Tonbridge, Kent (Tonbridge 2665).

**Messrs. Michael Laird and Will Redpath** [A/A] have moved their offices to 11 Randolph Place, Edinburgh 3 (Edinburgh 33969).

**Mr. Anthony H. M. Linscott** [A] has moved to 96 Drove Road, Weston-super-Mare, Somerset.

**Mr. Owen Luder** [A] is now practising from his new address at 78 Herne Hill Road, London, S.E.24 (BRIXton 7177 as before).

**Mr. Hector L. McIntyre** [A] has now changed his address to 988 Heywood Avenue, Victoria, B.C., Canada.

**Mr. Geoffrey Marks** [A] has changed his home address to 25 Moorland Court, Melville Road, Edgbaston, Birmingham 16 (Edgbaston 1549).

**Professor Robert H. Matthew**, C.B.E. [A], has moved his office to 31 Regent Terrace, Edinburgh 7.

**Messrs. Rainger, Rogers & Smithson** [F/A] have now transferred their offices to Glenmore Lodge, Wellington Square, Cheltenham (Cheltenham 3204 as before).

**Mr. Kenneth W. Reed** [A] has opened a new office at 426 Harrow Road, Paddington, London, W.9, and will be pleased to receive trade catalogues, etc. He continues to practise also from 13 Alicia Avenue, Kenton, Middx.

### PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate requires partnership or responsible post leading thereto, preferably Bristol area or coastal belt Portsmouth-Plymouth. Over 30 years' experience private practice, local government and government departments, varied work, including period and contemporary design. Moderate capital available Box 41, c/o Secretary, R.I.B.A.

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Fellow with established practice on south-west coast seeks partner. Some capital desirable. Box 83, c/o Secretary, R.I.B.A.

Associate, experienced in office building and domestic work, seeks junior partnership or position leading thereto. Capital available. Box 84, c/o Secretary, R.I.B.A.

Partnership available in West End of London in Jewish practice. Some capital desirable. Box 85, c/o Secretary, R.I.B.A.

Associate (30), Dip.Arch. (Distinction), 4 years' post-qualifying experience at home and in North America, seeks partnership or position leading thereto, in southern England. Capital available. Box 86, c/o Secretary, R.I.B.A.

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Fellow requires two rooms in Central London for office use. Telephone essential. Secretarial facilities desirable. Box 80, c/o Secretary, R.I.B.A.

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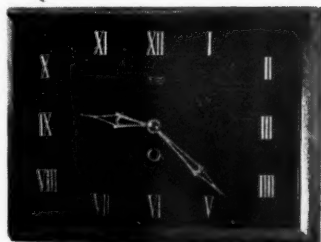


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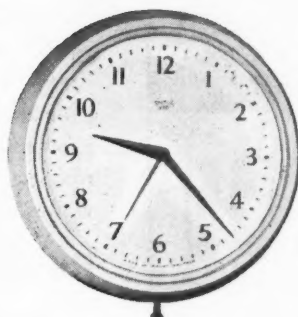


General view of School



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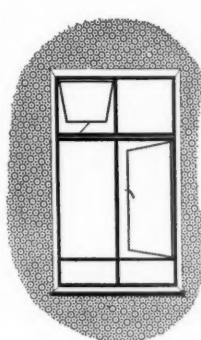
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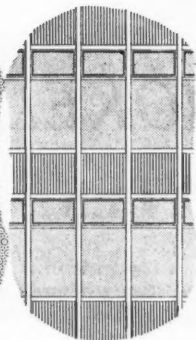
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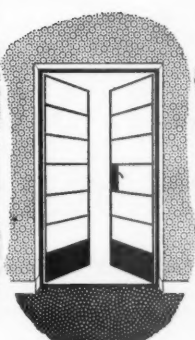
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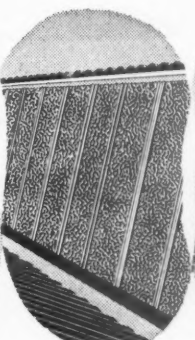
Metal Windows



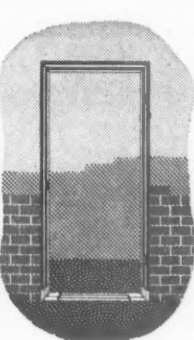
Wallspan Curtain Walling



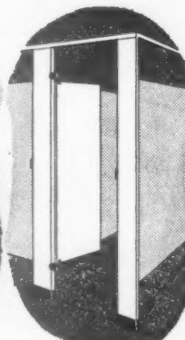
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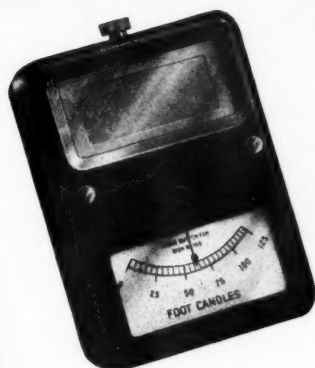
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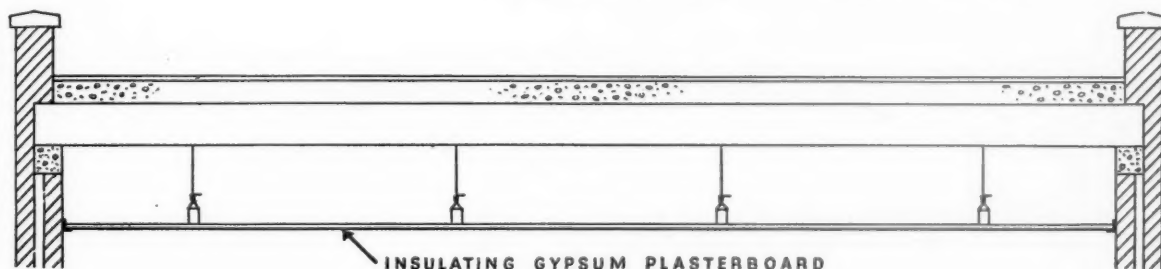
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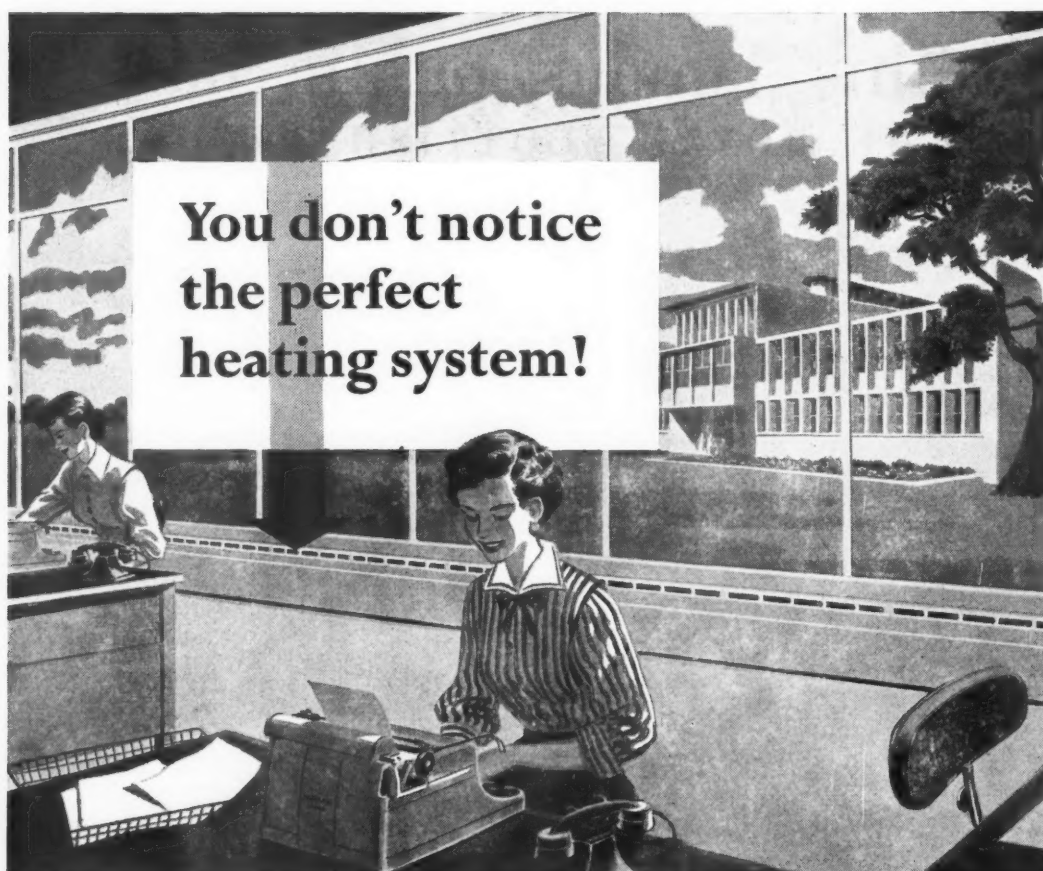
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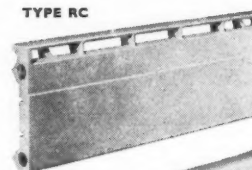
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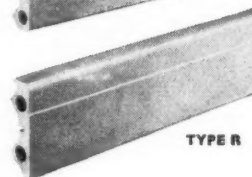
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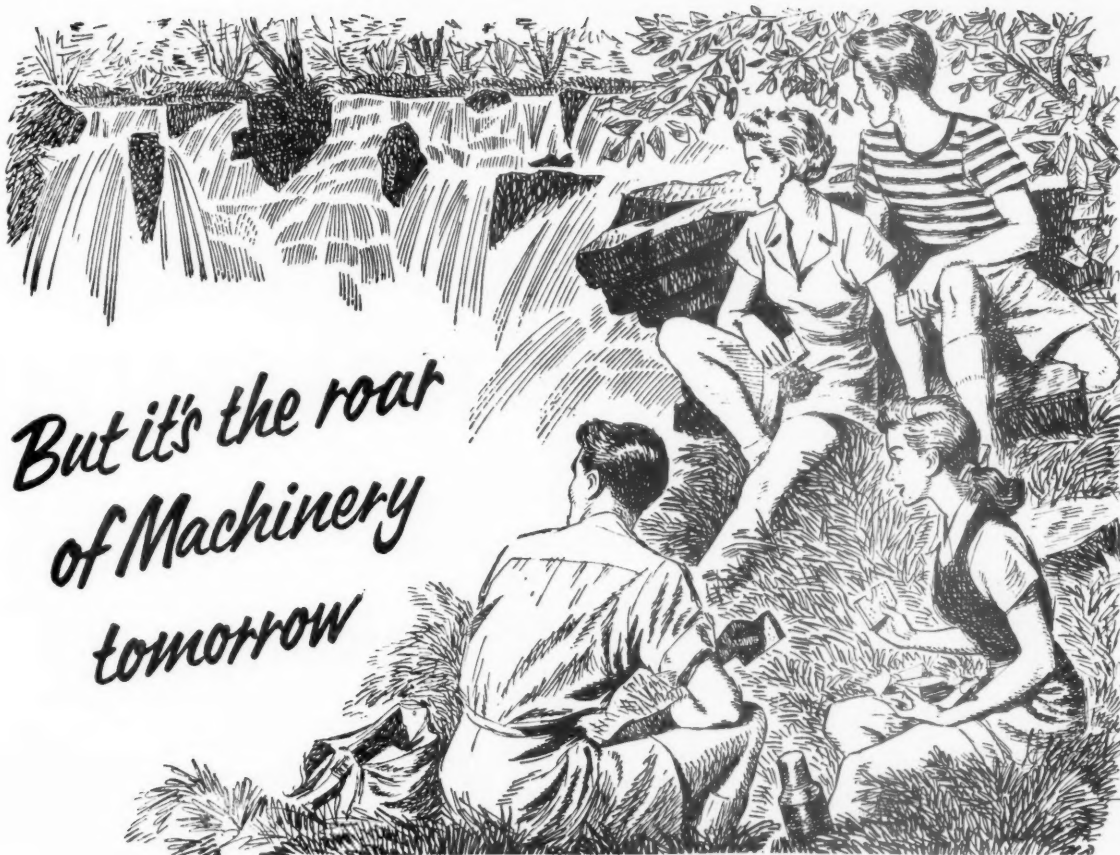
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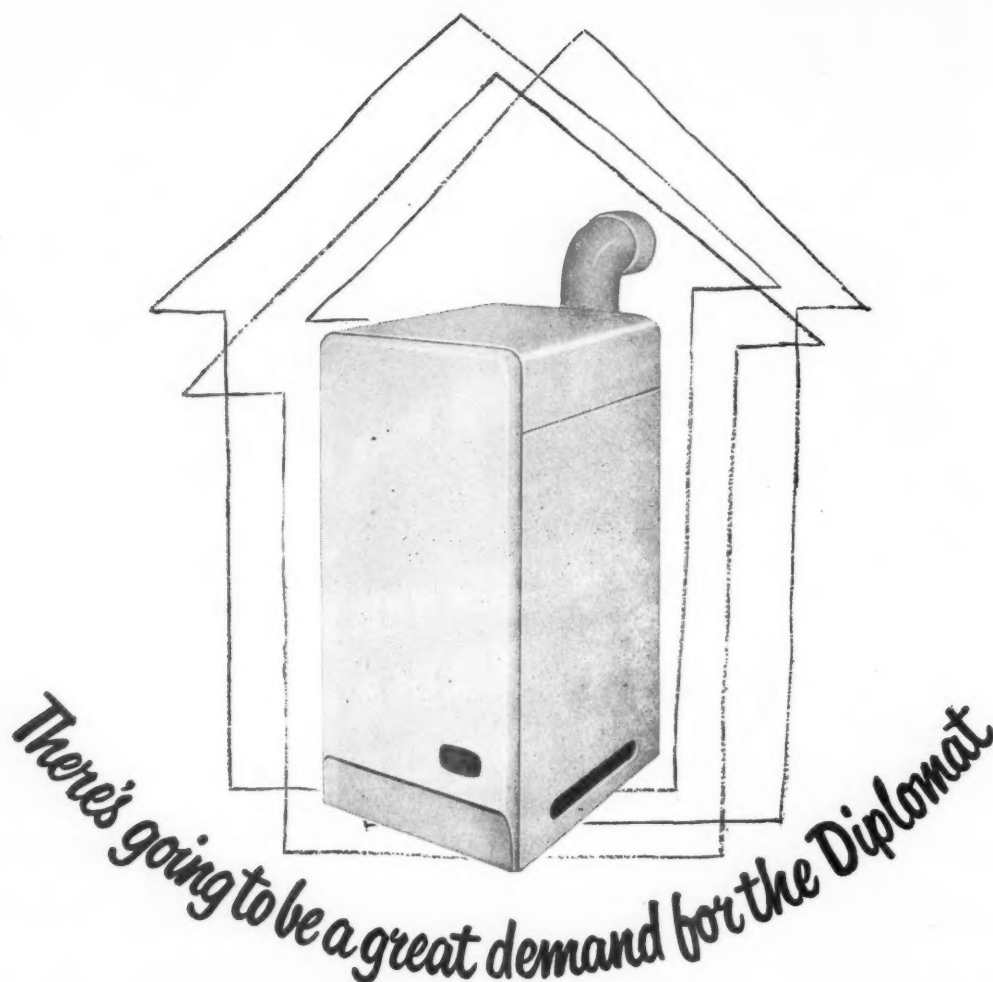
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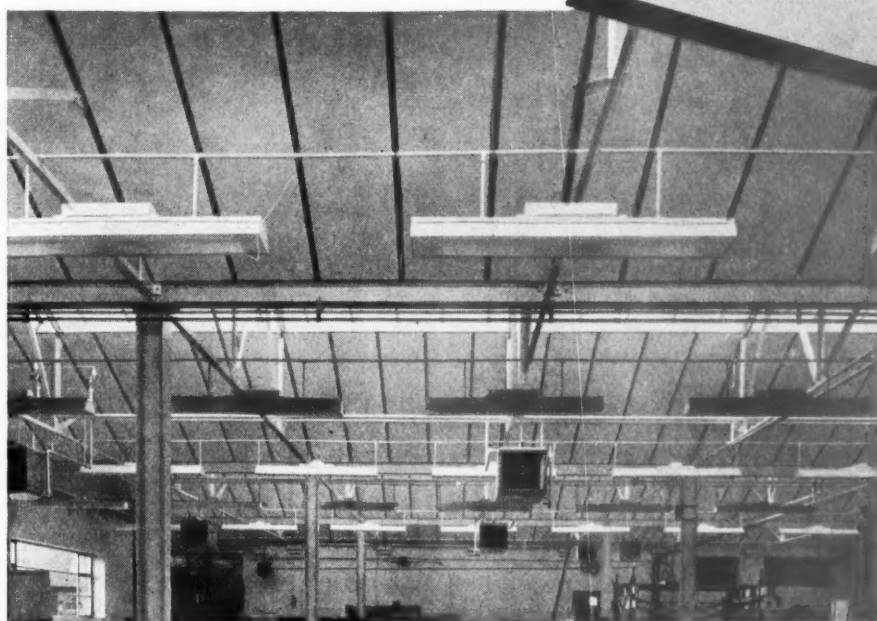




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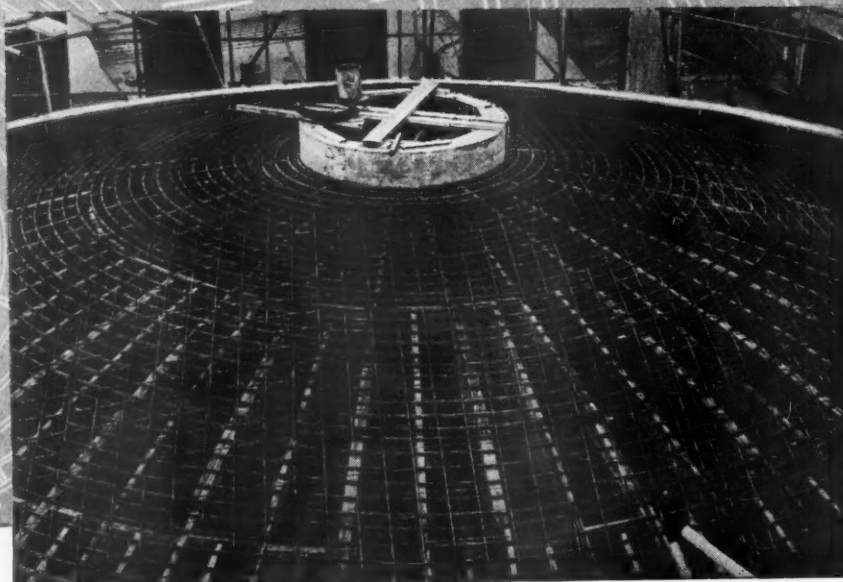
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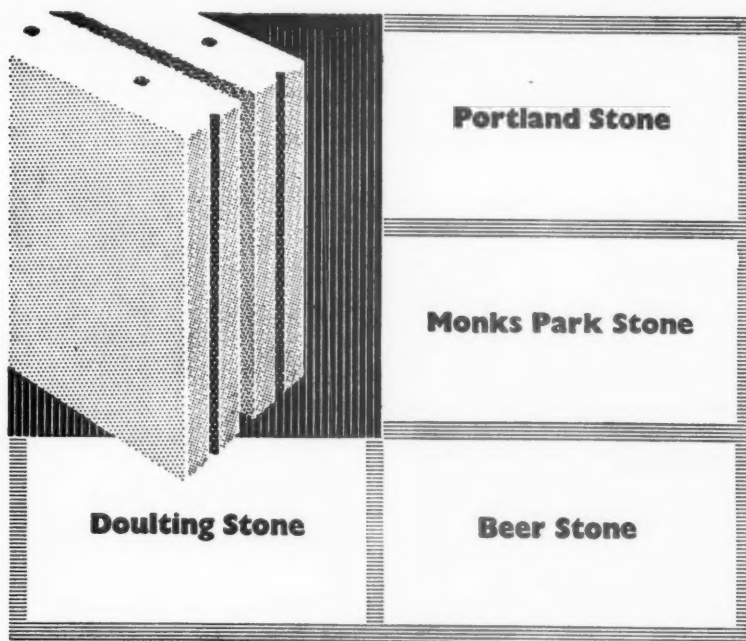
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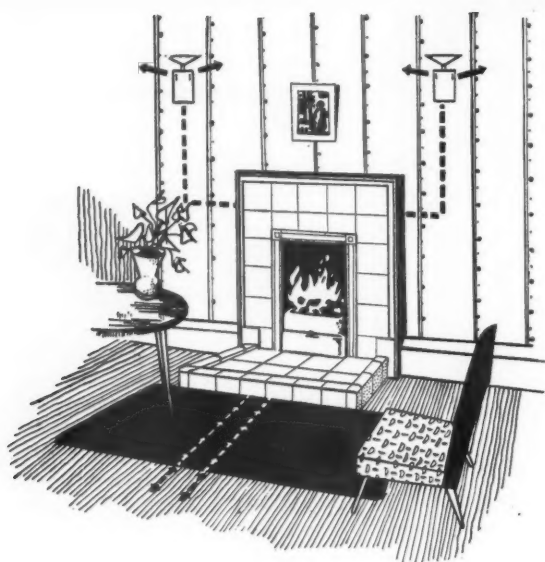


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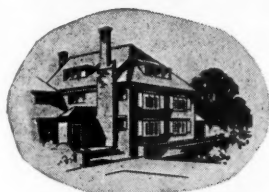


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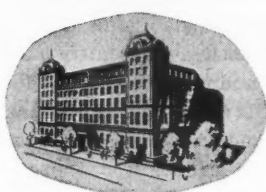
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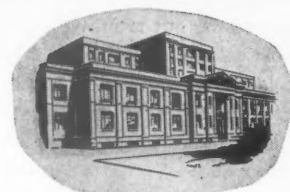
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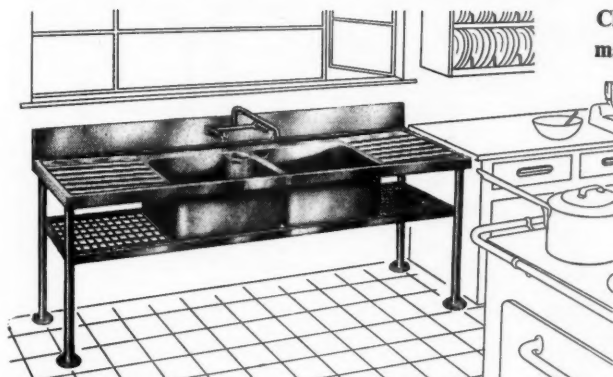
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# Building Research Station Digest

## No. 18 (REVISED)

OCTOBER, 1955

### Smoky Chimneys

#### Introduction

Methods of avoiding the smoking of chimneys have long been on record but they are still far from being universally applied and many cases of trouble still arise. Certain changes in the design and construction of houses and flats apparently unconnected with the problem have in recent years even accentuated the trouble.

The principles that govern the proper functioning of chimneys are quite simple. The fire requires some air to make it burn. More air is drawn into the flue from the room. All this air must be replaced by air entering the room elsewhere.

Apart from blockage by debris or soot in the chimney, there are three factors that can prevent the chimney operating properly. First, an insufficient supply of air entering the room to replace the air passing up the chimney; second, adverse flow conditions caused by poor design of the passages through which the smoke has to pass, i.e. the throat, gathering and flue itself, and third, the development of pressure by the wind at the top outlet of the chimney (influenced either by the building itself, by adjacent buildings or trees or by the topography of the site) which cannot be overcome by the rising flue gases. These three factors acting singly or together cause chimneys to smoke. Good design should ensure the absence of all three, though it is obvious that adverse site conditions cannot always be remedied.

#### Air supply

The air supply for a fire in a room of a house enters mainly through windows, ventilators and doors but if these are shut the air enters through gaps around windows and doors, through gaps in the floorboards when the floor is a suspended timber joist floor and through any other cracks or openings to the remainder of the house or to the outside. The amount of air required for a normal open fire ranges from 4,000 to 6,000 cu. ft per hour, i.e. roughly 4-6 times the volume of the room; some require more, others take more because the air is available. When windows and doors are shut this amount of air must enter through the cracks, etc. if the flue is to function satisfactorily; such a flow of air often leads to uncomfortable draughts. To prevent these draughts, draught excluders are often fitted and

in this way the air supply to the room can be so reduced that flow up the flue ceases and the smoke enters the room. A design feature in modern housing that has contributed to this deficiency of air is the use of a solid floor which cuts out the supply of air which, with a timber joist floor, was able to enter through the gaps between floor boards and around the skirting. Furthermore, the weather-stripping of windows almost eliminates air leakage through the gaps around the openable lights.

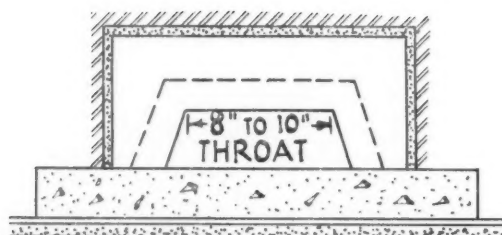
There is a considerable difference between the requirements in the amount of air for an open fire and for a closeable appliance and it is the greater demand for air by the open fire that leads to this type being responsible for the majority of smoke troubles.

There are two ways of dealing with a deficiency of air. The first is to provide special means of entry for the continuous supply of air needed by the fire; the second, to restrict the amount of air passing up the chimney by fitting a throat restrictor. Means of providing additional air are discussed later. Some modern appliances again incorporate the adjustable restrictors that were a common feature of Victorian fireplaces. Adjustable throat restrictor units for fitting to existing open fireplaces are also available.

The correct design of a flue and fireplace is more important than is commonly realized; there is reason to believe that, assuming an adequate supply of air, it is, in fact, the most important factor in preventing chimney smoking.

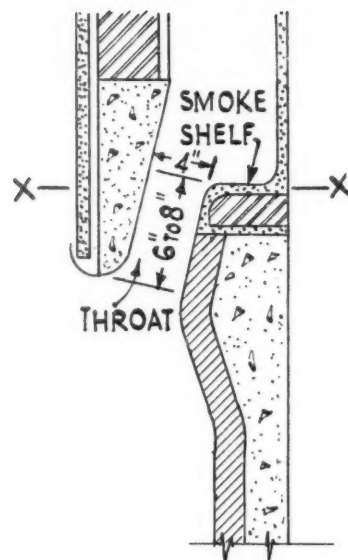
#### Fireplace design

**Throat.** The proper detailing of the throat is the most important feature of fireplace design. It should not be more than 4 in. from back to front; 6 in. to 8 in. from top to bottom and not more than 10 in. from side to side (Fig. 1). Where conditions are particularly adverse, e.g. on the top floor of a block of flats, it is often desirable to reduce the dimensions of the cross-section even more; an adjustable restrictor will then be necessary, as permanent restriction would cause difficulty in sweeping. Throat restrictors have the further advantage of restricting the amount of warm air drawn in from the room, thereby increasing the thermal efficiency of the appliance.



SECTIONAL PLAN  
AT X-X

FIG 1. Details at throat



SECTION

All internal surfaces of the throat should be smooth. The bottom of the lintel should always be rounded as shown in Fig. 1.

**Smoke shelf.** In the first statements of the principles of fireplace design enunciated in the 18th century, and in the earlier edition of this Digest, emphasis was laid on the provision of a horizontal smoke shelf level with the top of the throat. This is still considered desirable but it does not appear to be essential if all other features are properly designed. Fears are often expressed that accumulations of soot on the smoke shelf may lead to frequent chimney fires but there is no evidence to support these fears and, in any case, the shelf should be regularly cleaned if it is to fulfil its purpose.

**Fireplace surround.** The tiled fireplace surround is usually bought and fitted without regard to the effect it can have on the functioning of the flue. Fig. 2 shows a common feature that can contribute to a smoky chimney. Care should be taken to ensure that the gap between the lintel and the surround is either filled and finished to a smooth curve or closed by means of a curved plate as shown in Fig. 3.

#### Flues

Good practice in the construction of flues is all that is necessary but unfortunately this is not always followed. The size of the flue should be the normal 9 in. by 9 in. square section or 8 in. diameter circular and should not be less than

7 in. unless it is certain that only smokeless fuels will be used. Bends, when necessary, should be at an angle of not less than  $45^\circ$  to the horizontal and preferably not less than  $60^\circ$ ; they should be rounded and care should be taken not to reduce the section in forming them. Unless lined with clay liners the sides of the flue should be made smooth by careful pargetting.

In houses, and in flats other than those on the top floor, the length of the flue is generally sufficient to obtain a satisfactory draught, but the length of the flue of a bungalow or of a top floor flat, especially if there is a flat roof, may be less than that which is desirable. This disadvantage can frequently be offset by the use of a throat restrictor.

#### Chimney stacks and terminals

The minimum and maximum projections of chimneys above the roof laid down in building byelaws are irrelevant to the flow conditions. The height to which the chimney projects does affect performance, however, by influencing pressure variations set up by wind. This is discussed, under the effects of wind, below.

#### Position of doors

A door close to a fireplace will cause a very uneven distribution of air to the fire, even if it does not create cross-draughts that draw smoke into the room, especially if there are few other air inlets.



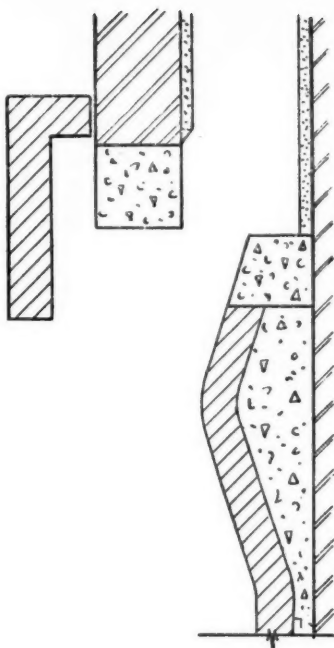


FIG. 2

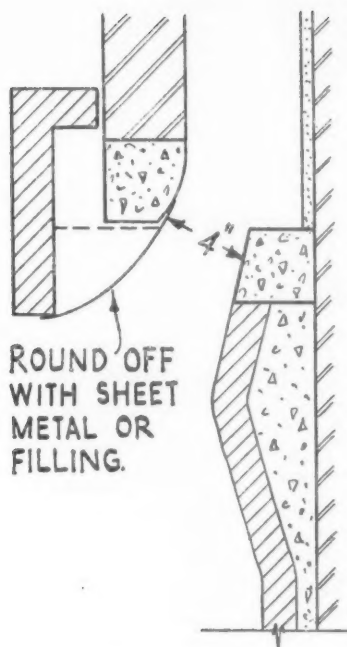


FIG. 3

#### Wind

Wind affects the action of a flue in several ways. It may on the one hand be directly helpful when, blowing across the flue outlet, it creates a suction in the flue. Other effects of wind, however, are probably much more important.

Fig. 4a shows a section of a house with the chimney rising from an external wall, the roof slope being greater than  $30^\circ$ . When the wind is in the direction shown a zone of high pressure is set up on the windward side. If the chimney head is within this zone the chimney is liable to smoke. The limits of this zone cannot be accurately defined and it is a matter for trial and error to determine at what height the outlet should be to be outside the zone. Experience suggests that the chimney stack should be carried through the ridge and to byelaw height above it. If it is not possible to arrange for the chimney to pass through the ridge, it should be carried up at least as high as the ridge though there may be difficult cases where a still greater height may be needed. A tall pot may add sufficient height to a chimney so that the outlet is taken outside the zone of high pressure.

Again referring to Fig. 4a, the wind creates a suction on the lee side of the house; if there is an opening to the room on this side, air may be drawn from the room and pressure reduced at the fireplace, thus tending to cause downdraught.

On roofs of a slope less than  $30^\circ$  (Fig. 4b), suction is produced by a wind, the suction increasing towards the ridge; for roofs approximating to a  $30^\circ$  pitch, pressures or suction produced by wind on the roof may be neglected. In both cases, however, the pressure on the walls of the weather side of the building, and the suction on the lee side, must still be considered.

Conditions of pressure can be influenced by other buildings, trees, hills, and the projections on roofs, depending on the size, height, shape and nearness of such objects. This is an old problem in built-up areas but it has recently given rise to trouble in newly built estates of mixed development, especially where the lower buildings are close to taller buildings. On one estate the chimneys of the two-storeyed houses functioned satisfactorily until the three-storeyed blocks were erected. Then every two-storeyed house adjacent to a three-storeyed block developed smoky

chimney trouble despite the fact that the design of the fireplace and flue was reasonably good. Unfortunately no general guidance can yet be given as to the form of layout that will minimize the effect of the adjacent buildings and it is necessary therefore to rely on careful attention to other factors, in particular to include throat restrictors in the fireplace design.

#### Suggested procedure for curing a smoky chimney

The method described in the following notes is designed to find by trial and error which one or more of the various factors are causing a chimney to smoke. Before the trials are carried out the chimney should be swept thoroughly. If the quantity of soot is abnormally great for the time of use since the last sweeping it is probable that the heavy soot deposit is due either to poor combustion of a suitable fuel or to the use of an unsuitable fuel. These possibilities should be investigated fully before dealing with any other aspects of the flue or chimney.

A thin sheet of metal is required for the trials. This can be used to experiment with a reduction in size of the fireplace opening, and to try the effect of restricting the throat. It may also be bent and inserted into the flue to see whether streamlining the lower air passages will be beneficial. Where sheet metal is not available a piece of cardboard may be used as an alternative.

It is always useful first to inspect the flue. If the shape and position of the lintel, the size of the throat, etc. are not in agreement with Fig. 1, it is likely that some modifications will have to be made, particularly to the throat.

The further procedure is as follows:

(1) Open the window and door of the room in which the fire is burning. If smoking then stops it is evident that the fire is being starved of air. Apart from the obvious solution of leaving the door or window open sufficiently to prevent smoking—a remedy which is probably out of the question because it would already have been adopted had it not caused excessive draughts—additional air can be admitted by means of ventilators fixed either in the external walls or in the partition wall separating the room from the hall, or by underfloor ducts. The position of the ventilator should be carefully considered as it may also cause draughts and in some positions there is the risk that the suction effect may operate. The problem of the extra air is not easy to solve and before making permanent provision, carry out tests as described in (2) and (3) below to see whether either of these methods will avoid the necessity for additional air. If the chimney continues to smoke with the door and/or window open it is evident that lack of air is not the cause of the trouble.

(2) Try the effect of reducing the height of the fireplace opening by means of the metal sheet. If it is found that this stops the smoking, and that

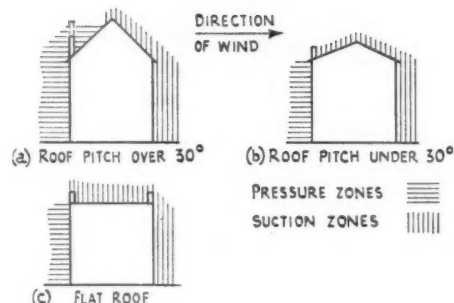


FIG. 4. Wind pressure and suction zones

the closure of the opening thus required is not more than 3 in. to 4 in., a permanent canopy should be fitted. If the closure needed to stop smoking is more than 4 in., it may curtail heating of the room.

(3) Try the effect of streamlining the entrances and reducing the throat. This can be done by bending the piece of sheet metal to the appropriate shape and inserting it at the throat. The opening of the throat should not exceed 40 sq. in. in area but in adverse circumstances, e.g. top floor flats, it will probably be found necessary to restrict the throat quite severely, say to 10–15 sq. in. If it is found that the restriction of the throat produces a marked improvement it is likely that the most convenient thing to do would be to install a variable throat restrictor, of which there are a number of different types and makes on the market. Alternatively, one or other of the precast concrete throat restrictors could be built into the fireplace.

If the fire continues to smoke it is likely that there are some troublesome external conditions. (4) Leaving the throat restrictor in position, try the effect of increasing the height of the chimney stack by means of a piece of sheet metal pipe. For this purpose it will be necessary to have two or three lengths of pipe and to start with the shortest length first. When it is found that a pipe of a particular length will stop smoking, it will be necessary to consider whether to fit a longer chimney pot than already present or to increase the height of the stack. If the length of pipe required is unduly long it may be possible to use a shorter length in combination with a cowl. There is, however, no information available as to the type of pot or cowl that will give effective results under any particular set of conditions.

The above considerations apply where the room is connected directly to the hall or to another room without a fireplace. If, however, the room is connected by means of intercommunicating doors with another room in which there is a fireplace, and if air-starvation

conditions exist in the first, it will frequently be found that the air for the first room will be drawn down the flue of the second room. If the two flues are on the same stack then some of the smoke issuing from the chimney serving the first room will be drawn down the flue of the second room. The remedy in such cases is to leave a door or window open in the second room, or to block up the flue in this room until required for use. The same considerations apply where the flue of the second room comes out in a stack with a flue of the adjacent house.

#### **Appliances**

The normal built-in open fire without back-boiler is usually found to have been fitted with little if any restriction to the throat. It is, however, relatively simple to fix a precast concrete restricted throat unit or a variable throat restrictor.

The open fire with a backboiler usually has some restriction of the throat but at present none

of the variable throat restrictors appear to be suitable for convenient fitting to such an appliance. The precast concrete units can be fitted though they might not provide sufficient restriction under adverse conditions. This type of fire may give some trouble if the size of the boiler has not been carefully considered in relation to the demands made upon it. When an appliance is used with a smaller fuel consumption than that for which it was designed, the large area of chilled surface exposed may cause the gases to be cooled too much to give a satisfactory draught, especially if the air supply to the room is restricted. If the cold surfaces are very near the fire they will hinder proper combustion.

The free-standing open fire with or without a back-boiler is fitted with an adjustable throat capable of being restricted very severely. As a result this type of appliance is much less likely to be liable to smoking troubles than are the other types of open fire.

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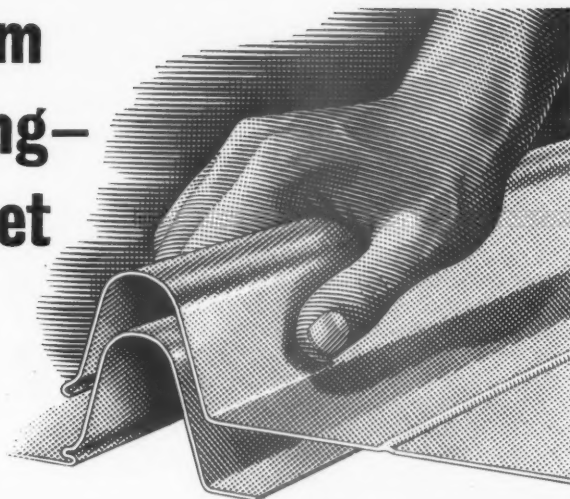




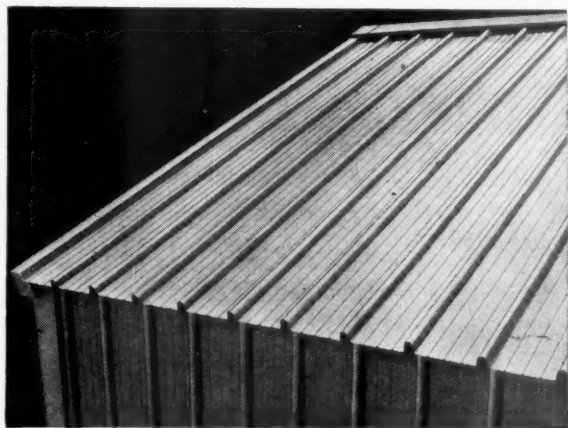
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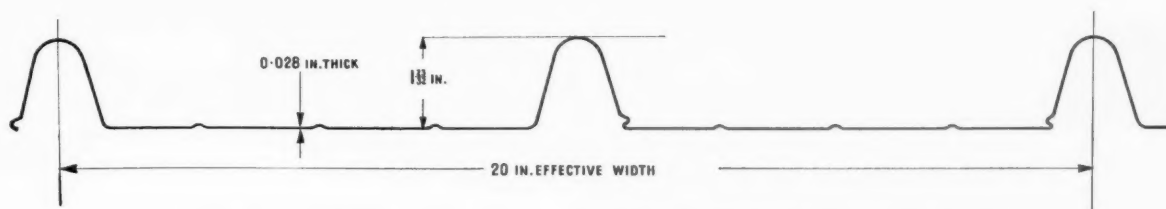
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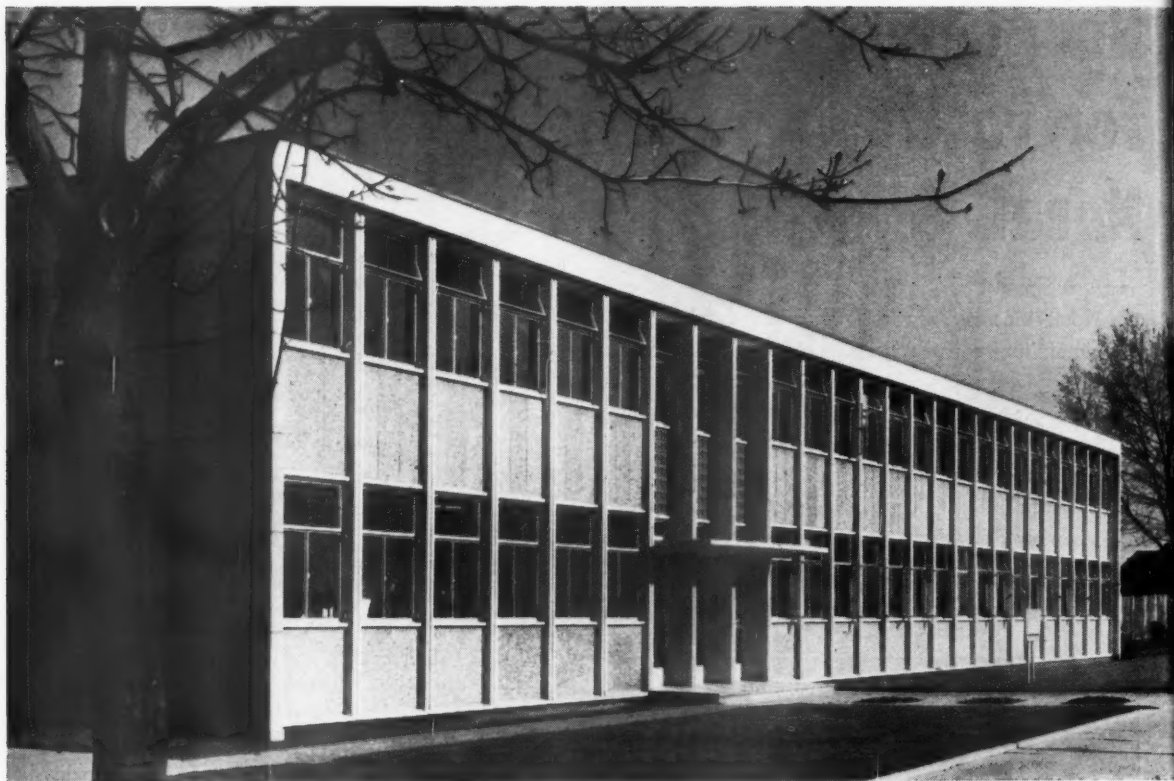
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